

## PROSPECTS FOR THE UK ECONOMY

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### *Section 1. The economic recovery from the Covid-19 pandemic*

- The combination of the Covid-19 pandemic and the public health measures taken to limit its spread here and overseas are forecast to contribute to a fall in GDP of 10 per cent in 2020. The level of economic activity in the final quarter of last year is not likely to be regained much before the second half of 2023, and Bank Rate is not likely to rise before then.
- Government debt as a share of GDP is likely to be above 105 per cent next year. Extending the Coronavirus Job Retention Scheme until June 2021 could protect around a million jobs later this year at relatively small cost and with lasting economic benefits.
- Unemployment is likely to rise to around 10 per cent later this year and could stay above its current level in the coming years due to economic scarring and hysteresis in the labour market. Unemployment would not rise to the same extent if the government extended the furlough scheme beyond the end of October.

The economic outlook in the United Kingdom and other countries remains dominated by Covid-19 and the public policy response to it. At the time of our last *Review*, released in late April, the country was in lockdown and there was substantial uncertainty about the economic effects of measures to contain Covid-19 and how quickly they could be eased. Since then, much of the news has been promising. The prevalence of Covid-19 has fallen and the lockdown has been eased to such an extent that by late July there are few areas of business that are not allowed to operate.<sup>1</sup>

Nevertheless, there are still substantial downside risks as the economy enters a phase where activity is expected to be subdued at the same time as government support measures are withdrawn.

The expected weakness of activity arises partly from the need to avoid social consumption while Covid-19 is still present. While most businesses are allowed to trade, they

cannot do so normally because of the need to maintain social distancing. This is affecting the hospitality and travel sectors particularly, and also means that many people are not commuting to city centres to work, with knock-on effects to businesses based there. Activity in these sectors and places is likely to be subdued for as long as Covid-19 is present with adverse consequences for employment.

On top of this, demand is weak because businesses are deferring investment and households are deferring consumption until they are able to spend on goods and services that are not currently available or thought not to offer the same experience.

To some extent demand is being reallocated across sectors and businesses with, for example, increased spending taking place on-line and more people taking holidays at home rather than abroad. But it is clear that the overall effect on demand is negative.

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Moreover, the impact of Covid-19 has been highly uneven with worse outcomes for the poor, low-paid workers in the hospitality sectors and those living in cramped conditions – death rates from Covid-19 have been around twice as high in the most deprived areas compared with the least deprived areas, according to the Office for National Statistics.

The support measures that the government has put in place have been effective so far in limiting the transmission of the economic effects of Covid-19. While GDP is estimated to have been reduced by about 25 per cent when the economy was in lockdown, and some jobs have been lost, unemployment has not yet picked up materially and there is no evidence yet of an increase in hardship on a scale commensurate with the reduction in national income. This is largely because the government has provided insurance by stepping in to support the incomes of those who would otherwise have lost their jobs. It has done this by effectively borrowing from those who are unable to spend to support the incomes of those unable to work. This borrowing has been channelled through the Bank of England. But the government support has added significantly to government debt.

On pages R60–R76 of this *Review*, Miles, Stedman and Heald (2020) argue, based on the economic impacts of the earlier full lockdown, ‘that the costs of continuing severe restrictions in the UK are large relative to likely benefits so that a substantial easing in general restrictions in favour of more targeted measures is warranted’. The government has begun proceeding down this route by easing lockdown restrictions and changing the nature of the support it is providing. In particular, the Chancellor confirmed in his ‘Plan for Jobs’ on 8 July that the Coronavirus Job Retention Scheme (CJRS) would close at the end of October. Businesses would instead be able to claim a £1,000 bonus for employees taken back on after a period on furlough.

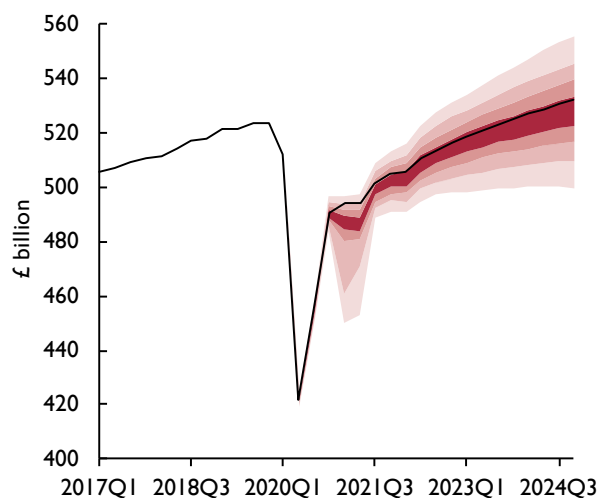
In our view this change of tack risks a substantial rise in unemployment that could become ingrained and end up costing more in terms of long-term unemployment and a weakened economy than it saves in terms of reduced payments to furloughed workers. Higher unemployment would also contribute to a deterioration in living standards. Bhattacharjee and Lisauskaite (2020) on pages R77–84 of this *Review* estimate that three times as many families will have incomes below the destitution threshold as a consequence of the Covid-19 crisis.

The costs and benefits of support policies depend largely on how quickly the economy recovers and whether there is a further wave of Covid-19 that requires further lockdowns.

Our main-case forecast scenario is for GDP growth in 2020 of minus 10 per cent, based on there not being a resurgence in Covid-19 or a reintroduction of lockdown measures, followed by growth of 6 per cent in 2021. While the CJRS has sheltered the UK from the full effects of the pandemic, we expect its winding down and withdrawal to lead to over a million people losing their jobs later this year as firms reduce their staffing requirements. Our main-case forecast is for unemployment to rise to nearly 10 per cent in the fourth quarter of this year, and then remain above its pre-Covid-19 level for several years.

But there are substantial downside risks even around this gloomy scenario, particularly from a serious ‘second wave’ of Covid-19 or other pandemic, that would require further lockdowns. These risks are illustrated in the GDP fan-chart (figure 1). On top of usual uncertainty this also builds in a material risk of a second wave starting in the coming winter in the UK and other countries. It

Figure 1. GDP fan chart (quarterly, 2016 prices)



Source: NIESR forecast and judgement. In addition to usual uncertainty the fan chart incorporates a 20–33 per cent change in the first half of 2021 of a second wave of Covid-19 with 40–80 per cent intensity of first wave effects.

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.

is assumed that this would result in renewed lockdowns with spillover effects across countries that mean that even countries that avoid a second wave of Covid-19 would be still affected by its economic consequences.

The downside risks to the economic outlook mean that there is an even chance that GDP will still be below its end-2019 peak at the end of 2023 and in that case unemployment would remain high for many years.

### Fiscal policy responses

While the government has so far been able to provide insurance by protecting the incomes of those who are unable to work, the cost of the fiscal measures is daunting and the government appears to be less willing than earlier in the year to ‘do whatever it takes’ to protect the economy and jobs.

Fiscal measures to help support the economy during the lockdown and beyond have been on an extraordinary scale by the standards of recent decades. Prior to the Chancellor’s ‘Plan for Jobs’ announced in the Summer Economic Update (SEU) on 8 July, the Office for Budget Responsibility (OBR) estimated the cost of the government’s coronavirus policy interventions to be £132.6 billion in 2020–21, including £75 billion on the CJRS and the Self-Employment Income Support Scheme.

On 8 July the Chancellor’s SEU confirmed the closure of the CJRS at the end of October and announced a potential £30 billion of additional fiscal measures,<sup>2</sup> including a Job Retention Bonus paid to employers who put furloughed workers back to full-time work, at a cost of up to (but likely to be less than) £9.4 billion. Other notable measures were a temporary reduction in VAT for hospitality, accommodation and attractions, a stamp duty holiday lasting until next year and spending on infrastructure, largely brought forward from existing allocations. In addition, the SEU footnoted departmental spending increases of £32.9bn. The OBR estimated the cost of the overall package at around £50 billion.

In its July release, the ONS noted that public sector borrowing in the first quarter of the fiscal year increased to £127.9 billion, more than double that borrowed in the whole of the past financial year. The OBR has estimated that the increase in the deficit when the UK economy was in full lockdown resulted from broadly equal increases in central government spending and decreases in revenues. Table 3 in the ‘World Economy’ chapter puts the fiscal interventions in international context and suggests that the UK government’s employment protection response has been large relative to other countries.

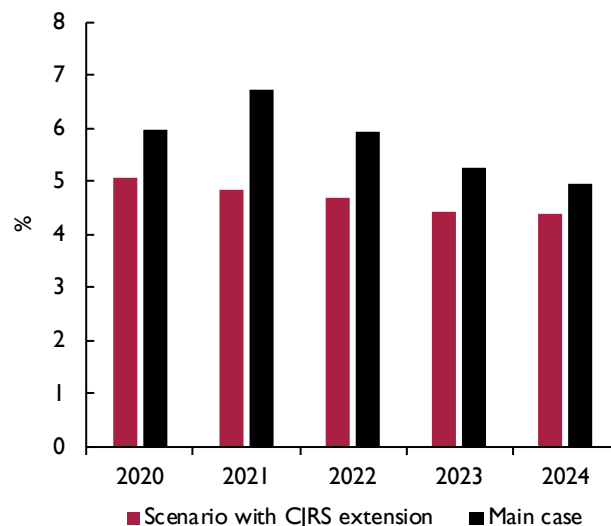
In our main-case forecast scenario, which encompasses announcements up to and including the July SEU, public sector net borrowing rises to £340 billion in 2020–21 after £54 billion in 2019–20. Public sector debt rises above 100 per cent of GDP this year and peaks at 105 per cent of GDP in 2021–22. Further details are in table A8.

### Extending the Coronavirus Job Retention Scheme

Against this background of rising public sector indebtedness, the planned closure of the CJRS seems to be a mistake, motivated by an understandable desire to limit spending. The furlough scheme was intended by the Chancellor to be a bridge through the crisis and there is a risk that it is coming to an end prematurely.

The scheme has been an undeniable success in terms of keeping furloughed employees attached to their jobs. According to HMRC data, 9.5 million jobs had been furloughed at one time or another, with £29.8 billion of claims made by 19 July. While there is no official count of the number of people on furlough at any given time, ONS survey responses suggest that in the second half of June just over 20 per cent of employees in surveyed businesses were on furlough leave. This amounts to up to around 6 million employees. Since then, more furloughed employees have returned to work, and by the end of the year the number of people on the CJRS would be much lower had it remained open and the economy continued to expand as in our main-case scenario.

Figure 2. Average unemployment rate with and without CJRS extension



Source: NiGEM database and NIESR forecast.

But the confirmation that the CJRS will close in October is likely to precipitate a sharp increase in unemployment in the second half of the year. To some extent this is probably already happening as the cost of the CJRS is gradually transferred to employers, some of whom see little prospect of taking back some of their employees in the current uncertain environment. Had the scheme remained open, they might have kept them on.

The incentives offered to employers by the Job Retention Bonus announced in the SEU look too small to be effective given the uncertainty about the economic outlook: a one-off payment of £1,000 per employee compared to an average wage of £530 per week. With many employers facing weak demand, cash-flow pressures and uncertainty about prospects throughout the rest of this year, we doubt that many furloughed workers will be taken back just because of the bonus.

To provide some quantification of the costs and benefits of extending the CJRS we model a scenario where the CJRS is extended for an additional eight months into the middle of next year (figure 2). Rather than rising to around 3 million in the fourth quarter of this year as in the main-case forecast scenario, the increase in unemployment is more muted. In particular, 1.2 million furloughed employees who would have lost their jobs at the end of this year instead stay on the CJRS at an average gross cost of £2,000 per job per month. This would also reduce unemployment below our main case forecast scenario by 700,000 through the first half of next year.

The short-term budgetary cost of paying businesses to keep these employees on furlough is relatively small once account is taken of the taxes they would pay and the benefits they would not receive. In this scenario, the direct cost would amount to around £10 billion in total by the middle of next year, around the same cost as the Job Retention Bonus. The reassurance that the incomes of furloughed workers are protected in this way would also add somewhat to consumer confidence and aggregate demand, perhaps more so than other measures announced in the SEU.

Supporting jobs in this way would also have a long-term benefit. Keeping people in jobs, even when on furlough, is likely to protect productivity and guard against scarring as firm-specific skills are not lost and furloughed employees remain attached to the labour market. Both of these effects are difficult to quantify, but there is substantial evidence that keeping people in work and preventing a rise in long-term unemployment reduces long-term

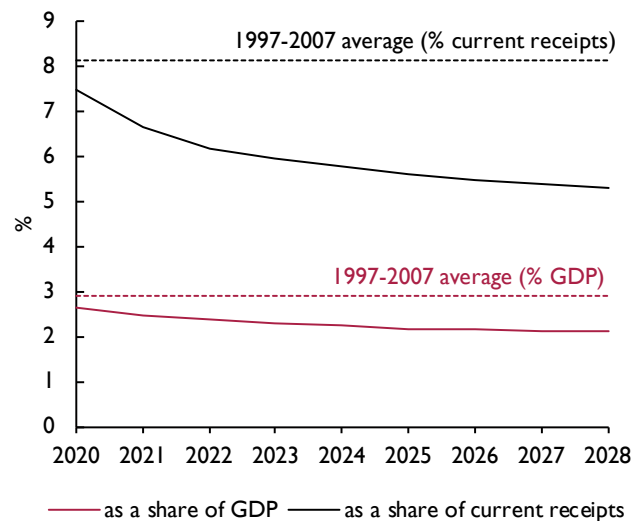
equilibrium unemployment (Rusticelli, 2014). In the longer run, lower unemployment (3.5 percentage points initially, 0.5 points in 2024) would lead to a higher path for economic capacity (potential GDP), enabling higher actual GDP and therefore a lower public sector debt ratio from late 2021 onwards than in our main-case scenario.

The macroeconomic impacts of extending the CJRS are quite small, but beneficial: output is around 0.2 per cent higher throughout than the main case forecast scenario, while public debt is around 0.2 percentage points of GDP lower by 2022 as the benefits of lower unemployment and higher activity come through. An early announcement of an extension might additionally protect some of the jobs that would be lost before October – potentially another million or so. Any impacts on cost, growth, unemployment and public debt would be larger accordingly too.

### Fiscal policy in the medium term

The medium-term outlook for the public finances depends critically on the extent and sustainability of the economic recovery and measures that might be put in place to strengthen the government balance sheet. In the March Budget, the Chancellor announced an increase in public spending focused on health care, education and infrastructure as part of the government’s levelling up agenda. Spare capacity in the economy means that this is likely to have a larger multiplier effect than we projected only a few months ago (see Hantzsche and Young, 2020)

Figure 3. Forecast government debt interest payments



Source: NiGEM database and NIESR forecast.

and we would expect some of these spending commitments to be protected throughout the current parliament.

We nonetheless expect the government to focus on bringing down the deficit from the elevated level in the current fiscal year. The Chancellor signalled some change in direction when, in launching the 2020 Comprehensive Spending Review on 21 July, he said “we will honour the commitments made in the March Budget to rebuild, level up and invest in people and places”, but did not commit to saying more than departmental spending would “grow in real terms”, rather than the 2.8 per cent real terms annual growth stated in the March Budget.

In our main-case forecast scenario, borrowing falls from 17 per cent of GDP in 2020–21 to 6 per cent next year and then to 3 per cent in 2024–25 (see table A8 for further details). Government debt as a share of GDP falls back below 100 per cent of GDP in 2024–25, due to the assumed profile of Term Funding Scheme loans, and some discretionary fiscal tightening (a combination of tax and consumption spending) in pursuit of a balanced current budget which is not successfully achieved over the forecast horizon.

With real interest rates at very low levels, government financing requirements appear manageable in the medium term. Government debt interest payments are set to remain low as a share of GDP and overall receipts (figure 3). With the Bank of England buying gilts more quickly than they are being issued, rates are heavily influenced at present by the decisions of the Monetary Policy Committee. There is no obvious reason to expect this unusual situation to change imminently or to lead to any financing challenges this year unless there is a major unanticipated shift in the Monetary Policy Committee’s view on the future path of inflation.

But low real interest rates cannot be taken for granted. Smith (2020) finds, using data from 1870–2016 for seventeen countries, that the dominant influence on national long interest rates is world interest rates that are outside domestic control. And there is a tail risk of falling prices that would increase the real cost of servicing the public sector debt. So in the current uncertain environment it is prudent not to assume real rates will remain low, even though this is likely.

Nevertheless, it is important to emphasise that the main counterpart to extra government borrowing this year is extra private sector saving; the government is not building up debt with the rest of the world. In our main case forecast scenario the increase in the government deficit from just over 1 per cent of GDP in 2019 to 15 per cent of GDP in 2020 is more than matched by an increase in the private sector surplus from a deficit of 3 per cent of GDP in 2019 to a surplus of almost 13 per cent of GDP in 2020 (see table A9 for details). This means that, should interest rates rise unexpectedly, the main beneficiaries would be UK businesses and households who have accumulated assets over this period. It also means that, should the government decide that it wants to reduce its indebtedness by raising taxes, the private sector in aggregate would be in a position to pay for the debt accumulated during the Covid-19 crisis.

In the longer term the key fiscal challenges include how to pay for an ageing society, how to level up UK living standards and how to adjust to any structural changes wrought by Covid-19 to the capacity and form of the economy. Public policy questions around the long-term sustainability of the ‘triple lock’ on pensions, for example, remain largely as they were before the pandemic and permanent changes should not be made based on short-term fluctuations in wages or inflation. The government should clarify its beliefs about the purpose of fiscal policy (as discussed in Chadha, 2020a) and should undertake a comprehensive review of taxation we have called for in the past (eg. Hantzsche and Young, 2019).

More generally, fiscal policy should be set to improve living standards by helping to prevent short-term economic disturbances from having long-term adverse effects. To a large extent the government has done this through the current Covid-19 crisis by providing insurance that protects people’s incomes. But there is a risk that it withdraws support while it is still needed. There is also a risk that the government rows back on its ‘levelling up’ agenda to address regional inequalities. This would be unfortunate as there is now an opportunity with elevated public spending multipliers for an expanded stimulus which coincides with the need for productivity-enhancing and environmentally necessary changes. ‘Levelling up’ is likely to have wider consequences, such as the spillover effects of spending between sectors, discussed using our Dynamic Sectoral Model in the May *Review*.

## Section 2. Main-case forecast scenario in detail

The economic outlook is extremely uncertain and depends critically on the effectiveness of policies to manage the economy while keeping down the Covid-19 infection rate. 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 C.

### Summary

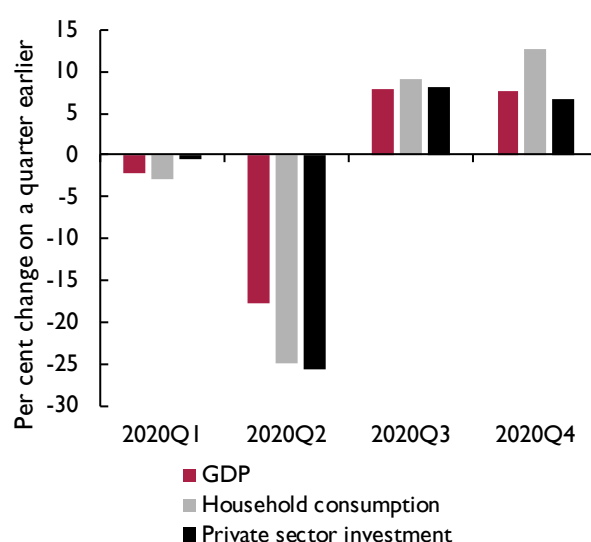
Our main-case forecast scenario is for GDP growth in 2020 of minus 10 per cent. This includes a reduction of close to 20 per cent in the second quarter followed by increases of 8 per cent in each of Q3 and Q4 as activity builds following the easing of the lockdown (figure 4). Four-quarter GDP growth in 2020Q4 is –6 per cent. GDP then grows by 6 per cent in 2021. This is based on there not being a resurgence in Covid-19 or a reintroduction of lockdown measures.

NIESR's July GDP tracker, using bottom-up analysis of sub-component trends and survey evidence, gives an initial outlook for the third quarter of growth of about 8–10 per cent. Social distancing is likely to remain a reality, voluntarily if not otherwise; a significant degree of the reduction in consumption would have occurred whether or not the government mandated the closure of many consumer-facing businesses. The combined effect of reduced household incomes for some and increased caution among others is forecast to drag on domestic demand for some time. In our main-case forecast scenario we expect household consumption to be 15 per cent lower

this year than last, and to rise by 13 per cent in 2021 but not return to its 2019 level until 2023.

The recovery is likely to be highly uneven. Just as the medical impact of Covid-19 has not been blind to ethnic and socioeconomic differences, nor has the economic impact. Households which can afford to are saving more. For a significant proportion of workers, disproportionately those in the top half of the income

Figure 4. 2020 aggregates: quarterly profiles



Source: NiGEM database and NIESR forecast.

Table 1. Summary of the main-case forecast scenario

	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP	1.9	1.9	1.3	1.5	-10.1	6.1	2.5	2.0	1.5
Per capita GDP	1.1	1.3	0.7	0.9	-10.6	5.5	2.0	1.5	1.0
CPI Inflation	0.7	2.7	2.4	1.8	0.7	1.9	2.1	2.2	2.1
RPIX Inflation	1.9	3.8	3.3	2.5	1.1	2.5	3.0	2.9	2.8
RPDI	0.4	1.3	2.4	1.2	-2.4	4.7	0.8	1.8	1.9
Unemployment, %	4.9	4.4	4.1	3.8	6.0	6.7	5.9	5.3	4.9
Bank Rate, %	0.4	0.3	0.6	0.8	0.2	0.1	0.1	0.3	0.6
Long Rates, %	1.3	1.2	1.4	0.9	0.3	0.5	1.0	1.3	1.6
Effective exchange rate	-9.9	-5.5	1.9	-0.3	0.0	-0.6	0.3	0.4	0.4
Current account as % of GDP	-5.2	-3.5	-3.9	-4.0	-2.2	-3.9	-3.6	-3.7	-3.9
Net borrowing as % of GDP	2.8	2.7	1.8	2.4	17.1	5.9	3.7	3.2	2.9
Net debt as % of GDP	83.1	83.2	81.0	82.3	102.8	105.0	104.8	103.8	98.3

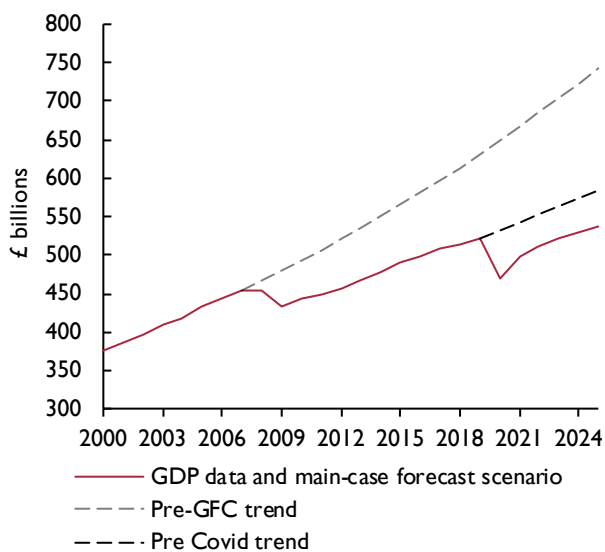
percentage change unless otherwise stated

distribution, incomes have been largely unaffected while outgoings have been reduced by enforced social consumption closures, leading to large increases in bank deposits (£52 billion in May) and repayments (£4.6 billion net in May). At the same time poorer households, who tend to have a higher marginal propensity to consume, have been hit harder and may also be during the recovery. StepChange, the debt advice charity, has suggested 4.6 million households risk taking on ‘dangerous’ levels of debt as a result of the pandemic and HM Treasury has increased funding for debt advice services to deal with a ‘flood’ of new arrears cases.

Beyond this year, the recovery in the main-case forecast scenario is projected to be slow, with long lasting effects from the Covid-19 shock (figure 5). On this basis, the economy ends up 8 per cent smaller in 2025 than it would have been following a continuation of the post-Global Financial Crisis rate of growth, itself materially slower than before 2008.

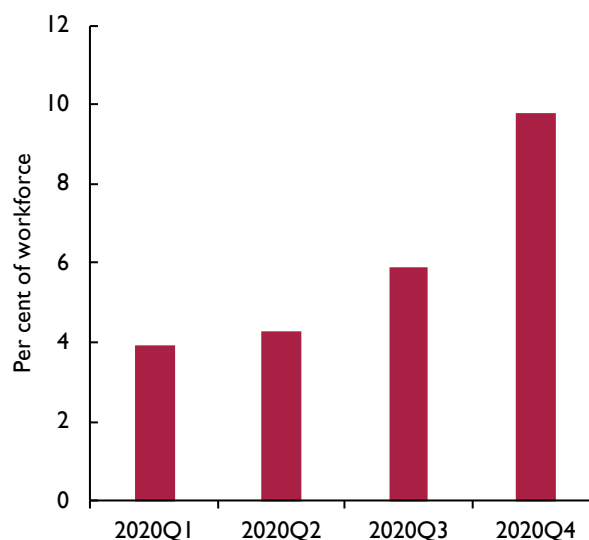
The scale of damage to the productive capacity of the economy may only become apparent in the longer term but some signs are already visible. Thousands of redundancies have been announced at several large and high-profile employers, including many linked to retail and travel. Businesses have also taken on loans to get through a cash-flow deficit estimated by the Bank of England at £140 billion. Only around a third of firms have been holding liquidity buffers equivalent to over

Figure 5. UK growth trends and forecast



Source: NiGEM database and NIESR forecast.

Figure 6. 2020 unemployment rate quarterly profile



Source: NiGEM database and NIESR forecast.

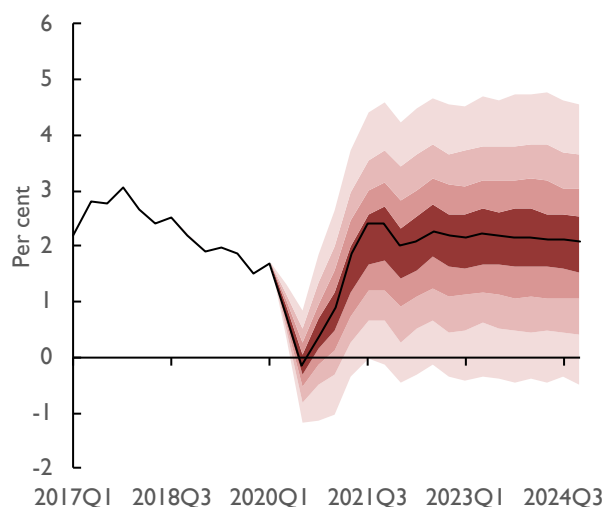
three months’ turnover, while in March UK banks’ lending to corporates increased to around thirty times the average monthly lending rate in 2019. Government-backed loans since March totalled over £40 billion by July. Much of this new debt is underwritten by government and issued on favourable terms but repayments could weigh on corporate balance sheets over coming years.

The claimant count rose by 1.4 million between March and June and vacancies are recovering slowly from their lockdown lows. While the CJRS has sheltered the UK from the full effects of the pandemic, we expect its winding down and withdrawal to lead to a ‘second wave’ of redundancies this year as firms are either unable to survive or reduce their staffing requirements. Our main-case forecast is for unemployment to rise to 6 per cent in Q3 and 10 per cent in Q4 (figure 6), remaining above its pre-Covid-19 level throughout the forecast period, though initially at least we would expect worklessness to be higher than measured unemployment.

In our central forecast CPI inflation falls to -0.1 per cent in Q3 but then recovers to average 2 per cent in 2021.

The CPI inflation fan chart in figure 7 is constructed with the possibility of a second wave in mind, consistent with the GDP fan chart in figure 1. Our main case scenario includes a brief period of deflation later this year followed by a swift recovery next year. Tenreyro (2020) has suggested that pandemics throughout

Figure 7. Inflation fan chart (per cent per annum)



Source: NIESR forecast and judgement. In addition to usual uncertainty the fan chart incorporates a 20–33 per cent change in the first half of 2021 of a second wave of Covid-19 with 40–80 per cent intensity of first wave effects.

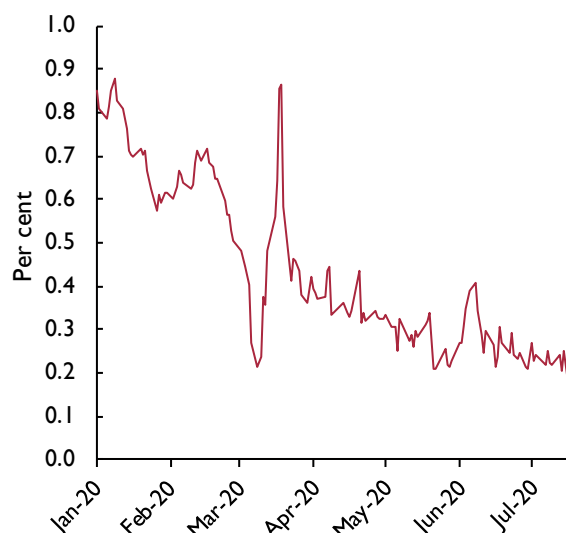
Note: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. There is a 10 per cent chance that CPI inflation in any particular year will lie within any given shaded area in the chart. There is a 20 per cent chance that CPI inflation will lie outside the shaded area of the fan. The Bank of England's CPI inflation target is 2 per cent per annum.

history have tended to lead to persistent declines in inflation; the fan chart indicates around a 20 per cent chance of CPI inflation close to or below zero during the forecast period (see also Box B).

Up to July the Bank of England had authorised £300 billion of additional gilt purchases (around 15 per cent of current government debt) since the start of the pandemic and has calmed financial conditions which threatened to become disruptive in March. Asset purchases for the first few months have helped to keep bond yields around the same levels as before the crisis or even lower. In our main-case scenario, Bank Rate remains at its current lower bound until 2023. The speed of gilt purchasing is expected to slow over the coming months; the impacts of existing forms of monetary policy are largely exhausted and the onus for any future stimulus lies with government either directly or by handing more tools to the monetary authorities (as discussed in Chadha, 2020b).

Quantitative easing's potential for asset price inflation has been recognised by central banks, as have its

Figure 8. 10-year gilt yields



Source: Bank of England.

potential distributional consequences (Bank of England, 2012). Given the potential effective monetisation of at least a proportion of the coronavirus debt, and the potential exhaustion of monetary policy tools in the eventuality of a further major shock (epidemiological or otherwise), in the absence of a clear framework there may exist tail risks to the monetary policy framework (a change in the inflation target, the primacy of price stability in the monetary policy mandate) that has existed largely unchanged since 1997.

### Financial conditions and housing (table A1)

Financial markets were an early indicator of the seriousness of the pandemic, dropping across the world in March. The FTSE 100 recovered around half of its losses by June but has stagnated somewhat since, with the headline index masking heterogeneity between sectors (relatively positive for technology and consumer goods/services, poor for financials, oil and gas). Supporting the recovery in equities has been the monetary policy response of the Bank of England, which has had the effect of reducing yields on bonds to record lows: by mid-July 10-year gilts had fallen from 0.8 per cent in March to below 0.2 per cent (figure 8).

Corporate bond spreads were one of the first indicators to spike but did not reach the levels of 2009. In addition to its headline monetary policy responses, the Bank of England introduced a new Term Funding Scheme aimed at SMEs and the Covid Corporate Financing Facility



(CCFF) with HM Treasury to buy commercial paper at prevailing market rates, latterly imposing conditions on dividends and senior staff pay.

These and government schemes to underwrite loans, plus the ‘Future Fund’ of equity-convertible loans via the state British Business Bank, seem to have succeeded in keeping premiums at manageable levels. There is a significant chance that, with TheCityUK warning of £32–36 billion of unsustainable corporate debt to government and pressure to ease the burden on struggling firms in the recovery, a significant proportion is either converted to equity or subjected to an ‘extend and pretend’ with attendant upside risk to public borrowing figures: for the time being the government has not signalled any intention to pursue this further.

There has been some evidence of tightening in the mortgage market with high loan-to-value ratio products being unavailable, but this appears to be easing. Around 10 per cent of borrowers are reported to have taken up the offer of mortgage ‘holidays’. Bank of England surveys suggest a pattern in the second quarter of decreasing supply and demand for secured and unsecured consumer credit. Housing market activity is likely to be supported in the short term by the temporary reductions in stamp duty announced in the SEU. This measure may have been badly timed as the Royal Institution of Chartered Surveyors’ June survey rebounded strongly after the easing of lockdown measures affecting the housing market. Despite this, the main-case forecast scenario has retained the assumed 4 per cent drop in house prices from our May main-case scenario, with suggestions of increased supply and reduced availability of credit likely to weigh on prices this year. After being flat in 2021, house prices pick up more notably in 2022 (table A5).

## Aggregate demand

### *Output and components of demand (table A3)*

Economic activity under ‘full lockdown’ was around 25 per cent lower than before the Covid-19 pandemic hit; lower demand played a major role in this and deficient demand will continue to define the shape of the recovery for the remainder of this year.

IHS Markit purchasing managers’ indices have bounced back after April lows, though a debate is underway over whether they reflect accurately monthly changes or longer-term turning points. According to the ONS, retail sales fell by 5 per cent in March and 18 per cent in April, before rising in May by 12 per cent to a value still 13 per cent below February levels. Many shops were allowed to

reopen from 15 June and new high-frequency indicators provided by the ONS using data from Springboard suggest that, by the second week in July, footfall had increased to around 60 per cent of its 2019 level. Retail sales including online shopping were higher in June 2020 than in June 2019, potentially reflecting switching to online sales and from social consumption to domestic consumption of food, drink and entertainment.

Clearly the effects of the pandemic and lockdown have varied enormously even among those businesses which have not closed down permanently or temporarily: in the second half of June turnover was down by more than half for over 50 per cent of trading arts and entertainment businesses but only 8 per cent of real estate businesses. Lifting lockdown may not mean returning to normal in proportion to the size of the fall: the decrease in transport and storage may prove slower to reverse than the similarly sized fall in construction and, as we discussed in the *May Review*, sectoral impacts naturally have spillover effects.

### *Tracking economic developments under lockdown*

Monitoring economic activity during the Covid-19 pandemic has been aided by steps taken by the ONS to increase the availability of so-called ‘high frequency indicators’, including on VAT returns and daily ship visits to the UK. Real time information on Pay As You Earn taxes from HMRC suggests that there were 760 thousand fewer people in paid employment in June than February. The ONS has also reported changes in online job advertisements, while real-time data from Companies House have enabled us to track the pace of business creation (see Box A). Participants at our Business Conditions Forum<sup>3</sup> in early July also indicated a weaker recovery in vacancies than other European countries, with Scotland the worst affected, but evidence of recovery everywhere except London and the North West of England.

Surveys by the ONS and others provide an early indication of developments ahead of the publication of official data. In a YouGov survey in June over half of business owners said that they would lay off staff within three months of the furlough scheme ending, including a fifth who said they would release more than 30 per cent of their staff; the British Chambers of Commerce found around 30 per cent of firms (especially larger firms) were planning to cut jobs. While the extent of timely data is welcome, the unprecedented nature of the downturn means that we have little historical precedent with which to estimate the economic forecasting power of, for example, a survey of bank accounts which Hacıoglu *et al.* (2020) suggest indicated a 40 per cent drop in household spending in April.

The same research indicates that the bulk of the fall occurred before legally mandated lockdown started. Brezezinski *et al.* (2020) find that the economic costs of lockdowns are relatively low, perhaps as low as 1.7 per cent of GDP, after accounting for the voluntary response that would occur in their absence, while Demirgüç-Kunt *et al.* (2020) find that countries that implemented lockdowns in the early stages of the pandemic are found to have better short-term economic outcomes as well as lower cumulative mortality.

### Household and NPISH (table A5)

#### Income

On average, household incomes have been cushioned from the full effects of the economic contraction, despite higher unemployment, because of government measures to protect incomes. Real household disposable income is forecast to fall by 2.4 per cent in 2020 before rising by over 4 per cent in 2021 as the recovery takes hold.

#### Spending

For those who have lost or will lose jobs or hours, a reduction in spending is likely to be unavoidable. For those who have been adding to their savings, consumer confidence will dictate the pace of the recovery of demand, especially in discretionary spending areas such as restaurants, bars and tourist attractions.

GfK's survey in late June suggested a modest improvement compared with two weeks earlier from -30 to -27. The Bank of England's June Decision Maker Panel estimated the negative impact of Covid-19 on sales at 38 per cent in Q2 and forecast a slow recovery to -26 per cent in Q3 and -16 per cent in Q4.

Nevertheless, in our main-case forecast scenario household consumption falls by 15 per cent in 2020 before rising by over 12 per cent in 2021. This mainly reflects reduced opportunities to spend in the current environment.

Research in the US (Goolsbee and Syverson, 2020) suggests that the majority of the fall in consumer traffic was driven by voluntary changes in behaviour rather than legal restrictions. Andersen *et al.* (2020) found that aggregate spending fell by 25 percentage points in Sweden and only four percentage points more in Denmark as a result of imposed restrictions. At the same time, economic indicators from Scandinavia and Germany have suggested elements of a strong recovery after the lifting of restrictions, indicating that restrictions can limit economic activity. The economic impact of lifting restrictions seems to depend on confidence in the public

health situation: experiences in Australia and the US indicate that consumers may quickly reverse increased activity if there are fears of a new virus outbreak.

UK pubs and restaurants which did open in early July when first permitted found sales down in the region of 50 per cent. According to the ONS in early July nearly two-thirds of people in Great Britain were uncomfortable with the idea of eating indoors at a restaurant; around a third felt uncomfortable with eating outdoors.

Around our central case scenario there exists a much better case scenario for household demand: one in which the virus is eliminated or a vaccine found quickly, consumer confidence returns and we 'get back to normal' quickly, even potentially seeing a boom in sectors with pent-up demand.

#### Saving

In our main-case forecast scenario, the household saving ratio rises from around 6 per cent in 2019 to 18 per cent in 2020, when spending opportunities are limited, before falling back to 11 per cent in 2021.

The pandemic has hit UK households hard but unevenly. A third of households in the wealthiest quintile report saving more, compared with 10 per cent of the poorest quintile, nearly a third of whom have been saving less: a pattern supported by high frequency data (eg. Hacıoglu *et al.*, 2020). Online job advertisers report the median posted wage rising due to composition effects, as vacancies dry up disproportionately for lower-paid jobs.

### Investment (table A6)

The uncertainty linked to coronavirus is likely to impact particularly on investment, itself already held back by Brexit uncertainty for a number of quarters and largely flat in Q1.

Bank of England agents report contacts saying that they had cut investment spending by around half: more in the case of those most affected despite increased investment in IT and areas related to social distancing. The ONS report that 42 per cent of those businesses which continued to trade in the first half of June said that capital investment had stopped or was lower than normal. Looking ahead, manufacturers surveyed by MakeUK reported across the board expectations to invest less in the coming twelve months than they have done in the previous twelve months. Further uncertainty for UK businesses will arise if there is little progress in trade negotiations.

Investment in dwellings fell in Q1 by 1.4 per cent. Bank of England agents reported in Q2 that construction was expected to hold up better in the public and housebuilding sectors than in commercial property, where orders had ‘collapsed’. Energy Performance Certificates lodgements – an indicator for completed constructions and transactions – returned to pre-Covid levels in June, though those relating to new dwellings were recovering slightly more slowly. Following its freeze, house price forecasts and pent-up demand suggest that housebuilding may be one of the less severely affected sectors over the coming year.

In our main-case forecast scenario business investment declines by 18 per cent in 2020, before increasing by 7 per cent in 2021; housing investment declines by 11 per cent in 2020 and then rises by 1 per cent in 2021. Risks are weighted to the downside: confidence is much harder to damage suddenly than to boost sustainably.

Chancellor Rishi Sunak confirmed in his March Budget the plan to ramp up public investment. Despite this aim public sector investment is likely to fall in 2020 due to the difficulty in getting projects started. Public sector investment is expected to pick up sharply in 2021.

Taking public and private investment activity together, whole-economy fixed investment declines by about 15 per cent in 2020 in our main-case forecast scenario, before increasing by 8 per cent in 2021.

### *External sector (table A4)*

Restrictions on international air, ground and sea travel imposed by many countries in response to the Covid-19 crisis are likely to continue to impact trade. In our main-case forecast scenario, export and import volumes both fall by around 25 per cent in 2020 before recovering strongly in 2021.

Since our May forecast, the UK government has formally ruled out an extension to the transition Brexit period. Negotiations on trade agreements are progressing at different speeds: formal talks have begun with Australia and New Zealand but a number of contentious areas remain in negotiations with the European Union, including state aid, agriculture and fishing. Disagreement over United States and existing tariffs and standards appear to be holding up progress in talks with the US, which do not have a set deadline. The government has not yet laid out the details of internal customs arrangements for trade between Great Britain and Northern Ireland. Pending clarity being given on this we have not altered our assumption, described in Hantzsche and Young (2020), of a standard free trade

agreement coming into force in 2021. Failure to agree this would constitute a further significant downside risk to our main-case scenario.

## **Supply conditions**

### *Labour market (table A7)*

As the UK economy is progressively exiting lockdown, the effect of the pandemic shock on the labour market and wages is becoming gradually more evident.

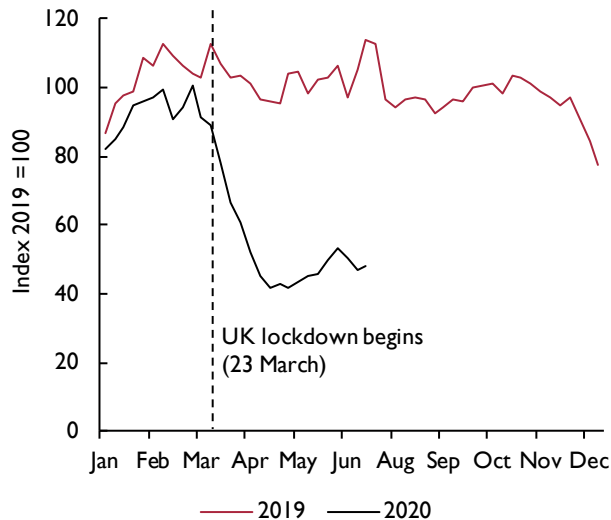
The latest data show that, while employment and unemployment rates have been stable, the impact of the lockdown may be seen in other labour market statistics, particularly from May onwards. According to the Labour Force Survey (LFS), the employment rate was at 76.4 per cent in the three months to May 2020, lower by 0.2 percentage points on the previous quarter, and the unemployment rate for the three months to May 2020 was unchanged at 3.9 per cent. More recent data from HM Revenue and Customs’ Pay As You Earn Real Time Information indicate that the number of payroll employees may have fallen by 650,000 between March and June.

The ONS Claimant Count, which measures the number of people claiming either Jobseeker’s Allowance or Universal Credit for the purpose of searching for work increased to 2.6 million in June. If all the claimants were to be counted as unemployed (in reality the relationship is less straightforward) then the unemployment rate would be around 8 per cent in June. Headline measures may not capture the number out of work if many are unable to meet the definition of seeking employment due to lockdown restrictions. Discouragingly for those who are seeking, vacancies in April to June fell to their lowest level since this measure began in 2001.

There are signs that the recovery in job vacancies has been mixed so far. Figure 9 shows the ONS and Adzuna total weekly online job adverts for the UK, down over 50 per cent in the second week of July compared to the average of 2019, largely flat after gradual recovery during June. The Recruitment & Employment Confederation (REC) Jobs Recovery Tracker reported that the number of jobs advertised in June totalled 1.30 million, compared with 1.27 million in May (but 1.87 million in February). The Institute of Employment Studies said in early July that “the fragile recovery seen a few weeks ago seems to have fizzled out, even as lockdown measures have been eased”.

Part of the weakness in new jobs growth will be due to slack picked up as employees return from furlough: 9.4

Figure 9. Total weekly online job adverts (all industries)



Source: Adzuna, Office for National Statistics.

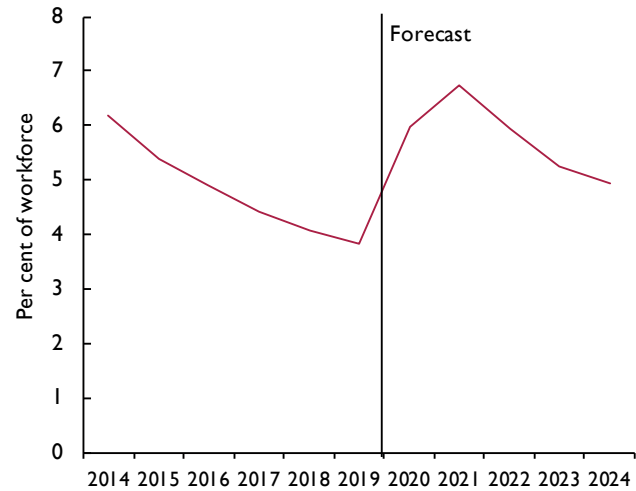
million jobs have benefitted from this wage support and survey evidence suggests more than a third of furloughed employees may already have returned. Headline measures of unemployment may also understate experienced reality under lockdown, as they require people to have looked for work in the past month to be counted; this downward bias in ILO unemployment and resultant increases in inactivity rates are likely to unwind gradually as unemployed workers start to seek openings.

We forecast unemployment to increase temporarily to about 10 per cent of the workforce by the end of 2020, averaging 7 per cent in 2021 and remaining above 5 per cent for the next few years (figure 10). This incorporates some hysteresis in unemployment as workers who have lost their job struggle to find a new one. The extent of long-term scarring in the labour market will depend on the extent to which government creates jobs directly to substitute for those lost or adopts policies to create new private sector jobs and help the unemployed into them. Positive UK employment figures may have been a feature of the post-Global Financial Crisis recovery – with weak wage and productivity growth – but even then it took seven years for the unemployment rate to decline from its peak of 8 per cent in 2011 to 4 per cent in 2018.

### Productivity

Labour productivity, as measured by output per hour, declined in the first quarter of 2020 by 0.6 per cent compared with the same quarter a year ago.

Figure 10. UK unemployment rate (annual average)



Source: NiGEM database and NIESR forecast.

Total actual weekly hours worked in the UK were 16.7 per cent lower in March to May than a year earlier. The planned unwinding of the CJRS from August to October, with costs to employers increasing each month, is likely to lead to a gradual increase in average hours worked as employees either go back to work or are laid off. We forecast average hours per employee to return to the level of the fourth quarter of 2019 in the first quarter of 2021.

Labour productivity growth 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), a slowdown unprecedented in 250 years of UK history. Recent research at our Economic Statistics Centre of Excellence suggests that productivity growth in the telecommunications sector has been understated by a significant degree: later in the year we will find out whether the ONS will significantly revise up their GDP and productivity data for recent decades or whether the improvements are largely offset by downgrades to productivity figures in other sectors which have ‘consumed’ more telecommunications than previously accounted for.

Covid-19 may further weaken low productivity trends. The closing of borders during lockdown has disrupted global supply chains, which may be difficult to reinstall quickly. In order to hedge the risk of further disruptions, some companies may decide to reduce the size of their

supply chains and rely more on local suppliers. Some governments, like the US, have also provided financial support to ‘re-shore’ manufacturing activities.<sup>4</sup> Less international trade is frequently associated with lower productivity growth in the long run. Such long-lasting effects appear because of sunk costs (see for example Gocke, 2002, or Cross *et al.*, 2009 for a discussion of hysteresis in economics). In the aftermath of the Global Financial Crisis the increased availability of labour may have held down productivity increases, though this is far from the whole story of the ‘productivity puzzle’, and higher unemployment may do the same again. Safer but more expensive workplace practices could also raise input costs.

We forecast productivity per hour to rise temporarily by around 2 per cent in 2020, falling back next year. We have reduced our long-run productivity assumption by one-tenth of a percentage point from around 1 per cent growth per annum to 0.9 per cent as a result of scarring from the pandemic, the UK’s exit from the European Union and continued moderate technological progress. One upside risk to our forecast would be a return to pre-GFC technological progress growth rate driven, for example, by innovations in digitalisation, artificial intelligence and healthcare.

Although most of the economic news is unquestionably negative, there are ways in which the destruction of coronavirus and the economic damage it has wreaked could be a positive influence as we rebuild. If zombie firms have been destroyed, private sector capital may be reallocated towards more productive, faster growing industries or to more socially desirable ends.

### Capital stock (table A6)

Estimates of the capital stock are relatively unreliable, reflecting inherent difficulties in measurement and regular revisions. We estimate that private sector capital stock growth was 1.4 per cent in 2019. With a background of high uncertainty related to the Covid-19 crisis, we forecast private capital stock to decline by half a per cent this year. By contrast, as a result of expected public investment initiatives, public sector capital stock growth is set to reach more than 3 per cent per annum in the years ahead.

### Wages (table A5) and prices (table A2)

Average weekly earnings growth fell to minus 0.3 per cent in the three months to May, leading to the return of the declining real wages experienced for much of the past decade. The fact that the CJRS replaces only 80 per cent of earnings will have had a downward effect related to the number furloughed. According to the ONS, falls in May

were correlated with the proportion of jobs furloughed and the extent of employer wage ‘top-ups’. In the second half of June, 41 per cent of businesses using the scheme were providing some element of top-up, especially those in the education and arts, entertainment and recreation sectors. Evidence from job websites suggests that the average wage of postings is flattered by compositional effects and the Institute of Employment Studies have reported the £15–24,000 salary band to be the worst affected. The KPMG/REC Survey of Jobs report suggests that starting pay for permanent and short-term staff fell again in June. Our July wage tracker estimated median pay to have increased slightly in June and forecast average earnings to rise slightly in Q2 and Q3, both partly due to lower paid workers becoming unemployed or not joining the workforce. Note that our forecast for average earnings (and employee compensation) in table A5 excludes the wages of furloughed workers which are treated as government transfers.

Falling or stagnant nominal wages will be cushioned somewhat by low inflation in the short term. CPI inflation was 0.6 per cent in June, while factory gate producer price growth has stayed around –1 per cent in recent months. The Bank of England’s most recent *Monetary Policy Report* forecast CPI inflation to fall close to zero later this year, since when the Committee has expanded its QE programme in pursuit of its 2 per cent inflation target.

Lockdown has presented various challenges for the accurate measurement of inflation, with consumption baskets being radically altered through unavailability or choice. Headline inflation has fallen and remained low in recent months but underlying trends suggest that this may be transient and driven by volatile items, some of which are over-weighted in inflation figures during lockdown.

There is evidence to suggest that the threat of deflation is exaggerated by headline figures which assume an unchanged consumer basket under lockdown. The dramatic fall in oil prices, in particular, has dragged headline numbers downwards at a time when petrol and diesel are making up a far smaller share of expenditure than usual. Oil prices are not the only potential factor. Diewert and Fox (2020) find a downward bias in the consumer price index. NIESR’s Consumer Price Index Lockdown Weighting (CPILW) estimated June inflation at 1.1 per cent, higher than CPI and CPIH. Goods and services suddenly more in demand – potentially experiencing rising prices as a result – will not be seeing their higher expenditure shares reflected in the index. Jaravel and O’Connell (2020) find evidence that the

share of transactions on promotion fell by around 15 per cent from the start of lockdown. The Office for National Statistics, which is reflecting Eurostat guidelines on the compilation of harmonised price indices, has recognised some issues and is intending to publish experimental estimates accounting for shifts in expenditure.

Our inflation tracker's measure of underlying inflation was at 1 per cent in June, consistent with inflation being slightly above its 2 per cent target in the year to June 2021. There are unusually high chances of inflation above or below target over the forthcoming years: most urgently on the downside the risk from re-opening the economy before Covid-19 is fully under control, exposing businesses to normal trading conditions before consumer confidence returns. In the longer term, inflationary pressures may arise from the newly expanded monetary base, unavailability or switching away from cheap re-shored supply chains in the wake of Covid-19, or a Brexit-related productivity shock or sterling devaluation. We consider stylised scenarios leading to inflationary or deflationary episodes in Box B.

### Sectoral balances

Table A9 shows the saving and investment balances of the household, corporate and public sectors of the economy and the resulting balance with the rest of the world. If investment is greater than saving for a sector, then that sector is a net borrower. The aggregation of these three domestic sectors is the current account balance.

One notable effect of Covid-19 in the main-case forecast scenario is the reduction in the current account deficit from around 4 per cent in recent years to 2.2 per cent this year. This is partly accounted for by the reduction in international trade across the world that naturally tends to reduce imbalances.

As discussed above, the willingness of households to spend will determine the pace of the recovery over the next few years. In our main-case forecast scenario the saving ratio rises from 6 per cent to 18 per cent this year, falling to 11 per cent in 2021 and returning to a level last seen before the Brexit referendum in 2016. Malmendier and Shen (2020) and Kozłowski *et al.* (2020) have found evidence that the experience of a serious economic downturn can 'scar' consumers in the long run by making them more likely to save. There is also an increase in corporate saving as businesses focus on control of their balance sheets. This sharp increase in domestic saving is the counterpart to the public sector's expanded borrowing, with little additional borrowing from abroad implied.

### NOTES

- 1 See 'The next chapter in our plan to rebuild: The UK Government's COVID-19 recovery strategy'.
- 2 Though the Institute for Fiscal Studies has estimated that up to £10 billion will be funded by underspends elsewhere: see Phillips, D., 'Up to £10 billion of the Chancellor's 'Plan for Jobs' will be funded by underspends on previously planned projects', IFS Observation, 16 July.
- 3 <https://www.niesr.ac.uk/sites/default/files/files/BCF%20July%202020.pdf>
- 4 <https://www.reuters.com/article/us-usa-trade-reshoring-exclusive/exclusive-new-u-s-development-agency-could-loan-billions-for-reshoring-official-says-idUSKBN23U31F>.

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### Box A. Firm creation in the UK during lockdown

by Alfred Duncan\*, Miguel León-Ledesma\*\* and Anthony Savagar\*

Business creation is an informative measure of real economic activity. During exceptional events such as the Covid-19 pandemic, it is important to develop tools that allow us to measure in real time the effect of social distancing policies on the economy. The data available from the UK's Companies House allows us to track new daily company incorporations.<sup>1</sup> The main advantage of this data is in its near real-time nature. Here we look at the results of our analysis of new companies' incorporations in the UK since the start of the lockdown measures up until 30 June 2020. We aim to quantify the extent of supply-side disruption caused by social-distancing measures.

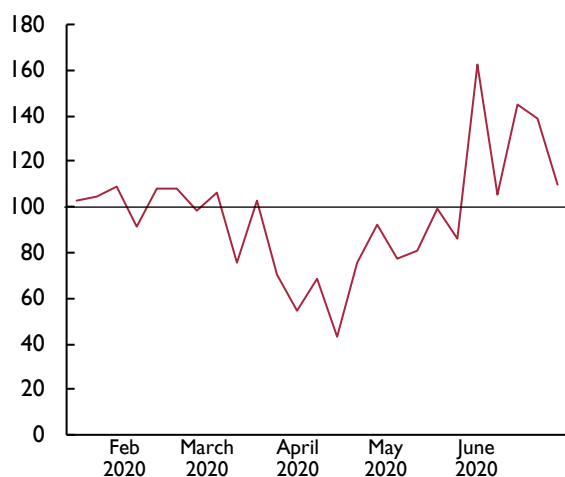
Business creation is also important for deeper economic reasons. Firstly, it is important for productivity dynamics. New firms grow to compete with existing firms, putting pressure on established firms to continue to innovate and keep prices low as consumers have alternative choices. Additionally, successful new firms grow faster than existing firms and have higher levels of productivity (Foster, Haltiwanger and Krizan, 2001). In fact, evidence for the US suggests a small number of high-growth startups account for large portions of aggregate productivity, output, and employment growth (Haltiwanger, Jarmin, Kulick and Miranda, 2016). This is especially important for the UK given its weak productivity performance in the recent past. Secondly, new firms are important for employment creation. A fall in business creation directly reduces the number of jobs created. But this has a long-lasting effect as the firms created during a crisis age (Sedláček, 2020). Furthermore, surviving new firms create more jobs than they destroy, so they are net job creators.<sup>2</sup>

#### Aggregate company incorporations

Figure A1 shows weekly company incorporations in the UK since January 2020 relative to the same week in 2019. In the UK, social distancing measures had several stages. On 16 March all non-essential travel was prohibited. On 20 March the closure of pubs, restaurants, and other social contact businesses was announced. The full lockdown was announced on 23 March. Starting 10 May, various measures to ease the lockdown were implemented.

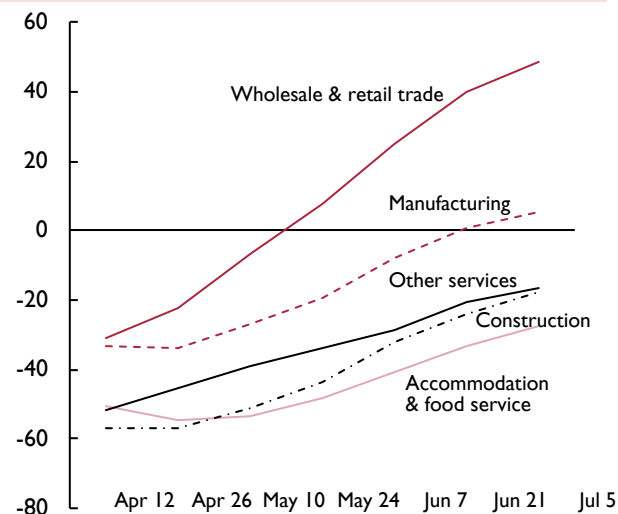
Before the lockdown period, the number of new firms created in 2020 was very similar to the same period in 2019. The number of new incorporations declines sharply after the third week of March (week ending Friday 20th March), which is when lockdown measures were implemented strictly. In the second week of April, new firms created were less than half of those created in the same period last year. There is a recovery in the last two weeks of April which may be driven by different dates for the Easter holiday. However, the recovery in firm creation since mid-May appears to be sustained. Firm registrations in June exceeded their 2019 levels. New company registrations were 60 per cent higher than the same week in 2019 for the week ending 2 June 2020; this week included an announcement extending the Self-Employment Income Support Scheme. Overall, the recovery of business creation coincides with the loosening of lockdown policies. By the end of June, business creation over the lockdown period had

Figure A1. Company registrations per week relative to 2019 level<sup>(a)</sup>



Note: (a) Company registrations per week in 2020 (relative to 2019 registrations for the same week = 100)

Figure A2. Change in new firm incorporations by sector<sup>(a)</sup>



Note: (a) Cumulative company registrations by industry, 23 March–30 June 2020 (selected industries, % difference from 2019 values).

### Box A. (continued)

almost recovered to 2019 levels; we estimate that, as of the end of June, there are 7,107 missing firms compared with 2019 registrations, representing a fall in firm creation of 3.4 per cent.

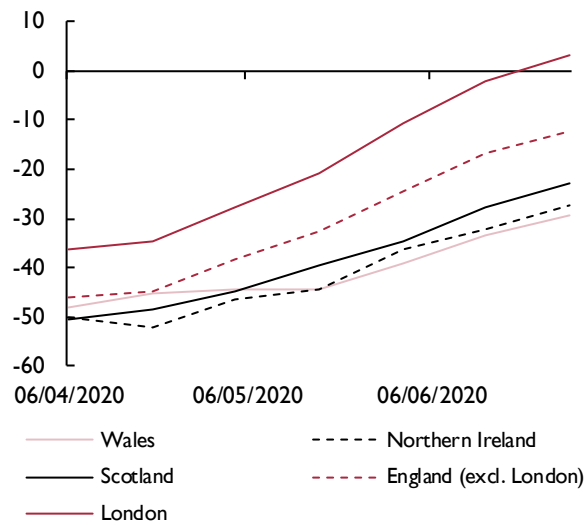
#### Sectoral change in company incorporations

Figure A2 shows the effect of the lockdown on business creation across key selected sectors. The figure presents the cumulative change since March 23 relative to 2019 values. It shows that the recovery of firm registrations has varied widely across industries. Unsurprisingly, accommodation and food services experience a very sluggish recovery with firm creation still 30 per cent down from 2019 values. Construction recovers faster after being initially the worst hit sector. Wholesale and retail trade recovers the fastest, possibly driven by new registrations of companies offering online and delivery services. Registrations by the end of June are close to 50 per cent higher than in 2019. Finally, manufacturing (as well as other goods-producing sectors not in the plot) had reached 2019 levels by mid-June. In general, sectors that require personal contact with customers and are also less essential in consumption are worse hit.

#### Regional analysis

Figure A3 shows that Wales, Scotland and Northern Ireland have suffered the largest declines in business creation relative to the same period last year. Although the figure shows a synchronised decline in all regions at the beginning of the lockdown, the recovery has been uneven. In London, firm creation has fully recovered to catch up to 2019 levels. All English regions perform better than the three countries under devolved administration, and are experiencing faster recoveries. Wales is notably hard hit, with 29 per cent fewer companies being registered than the same period last year. These regional disparities cannot be fully explained by geographical differences in industry composition: the fall in business creation in Wales is worse than in any individual sector.

Figure A3. Change in company registrations by region<sup>(a)</sup>



Note: (a) Cumulative company registrations by region, 23 March–30 June 2020 (percentage change from 2019 values).

Figure A4. Map of regional effects of lockdown on company registrations. 23 March–30 June values relative to the same period in 2019

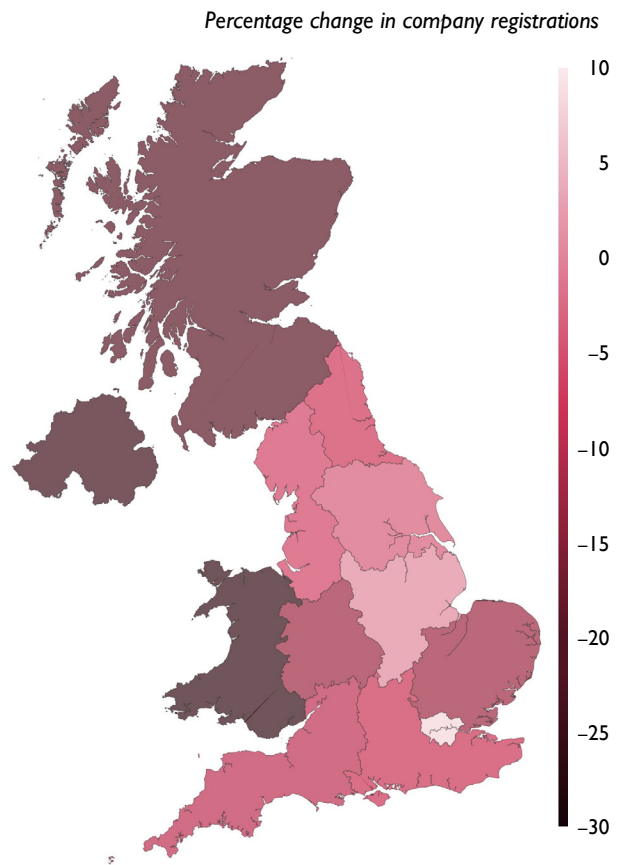


Figure A4 maps these regional differences with a finer disaggregation for the English regions. The strongest performing regions are Greater London and the East Midlands, which both have seen more company registrations than over the same period in 2019.<sup>3</sup>



## Box A. (continued)

### NOTES

- 1 The full data file can be found on the Companies House website ([http://download.companieshouse.gov.net/en\\_output.html](http://download.companieshouse.gov.net/en_output.html)). The full list of variables is available at [https://github.com/asavagar/companies\\_house\\_data\\_analysis/blob/master/freedataproducdataset.pdf](https://github.com/asavagar/companies_house_data_analysis/blob/master/freedataproducdataset.pdf).
- 2 See Sedláček and Sterk, 2020, for a deeper analysis of these points with reference to the US.
- 3 On 29 June 2020, a local lockdown was announced for Leicester, the largest city in the East Midlands region. We expect this lockdown to have a negative effect on East Midlands' firm registrations in July.

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## Box B. Upside and downside risks to inflation

by *Rory Macqueen\**

This box sets out two potential alternative paths for inflation over the next few years. In each case, inflation deviates from its target significantly because of insufficiently powerful monetary policy responses. In one case the monetary policy response is insufficient to push inflation back up to target after a negative shock because it is inhibited by the lower bound on nominal interest rates. In the other case inflation remains above target after a positive shock because monetary policymakers are under pressure not to raise interest rates when unemployment and public sector debt are elevated. These different cases highlight the difficulty in forecasting inflation in current circumstances.

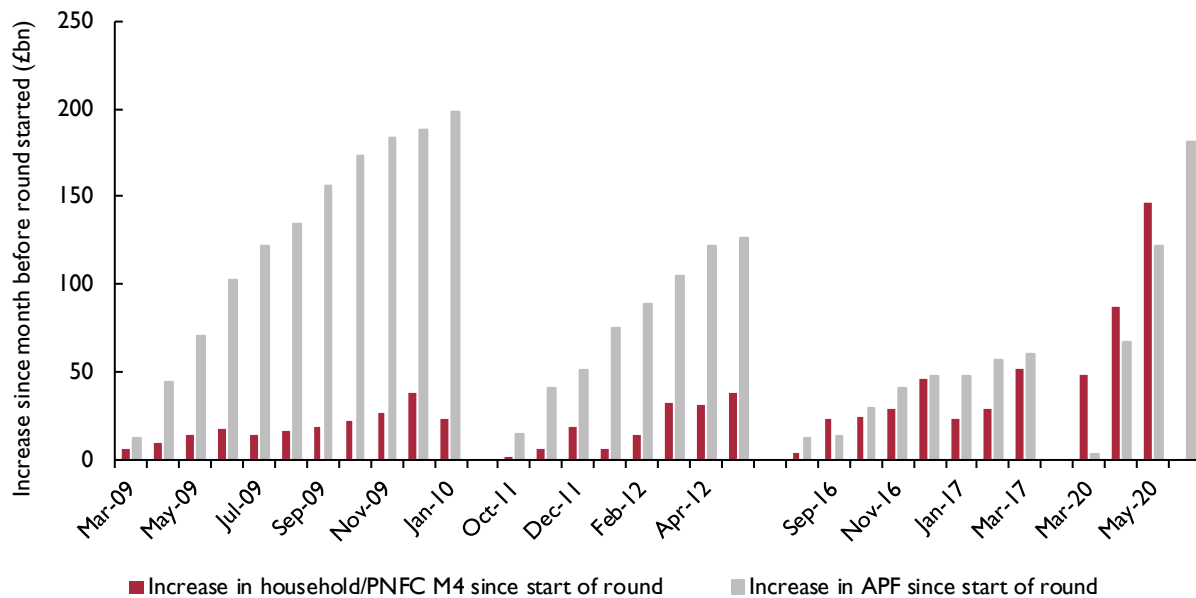
As one stylised example, what if consumption is slower to recover than in our main-case forecast scenario? Using NiGEM we model a ‘demand shock’ based on our main-case forecast scenario but with consumption recovering more slowly, due to precautionary saving, and costs picking up more slowly. Specifically we impose that private sector consumption is 3 per cent lower during the recovery than in our central forecast for two years from Q3 this year. We also impose a shorter negative 0.5 per cent shock to unit costs, representing weaker wage growth and lower capacity utilisation rate (around the recent average level). The zero lower bound inhibits monetary policy from preventing a fall in the price level and we have not attempted to model negative interest rates, yield curve control or any of the other varieties of unconventional policy other than QE.

The result is a prolonged period of falling prices as lower costs react to weaker demand and fall further endogenously. The consumer expenditure deflator falls by 8 per cent cumulatively over five years and the public sector debt ratio reaches some 13 percentage points higher than in the main-case scenario. Unemployment is around 1 percentage point higher until 2023.

At the other extreme, Charles Goodhart (Goodhart and Needham, 2020) has been among several warning of the return of significantly higher inflation than the recent historical record, suggesting that the current dramatic rise in the savings rate is largely involuntary and could be unwound quickly.

There has been a rapid expansion of the monetary base thanks to quantitative easing, offset by rapidly falling velocity; unlike during the Global Financial Crisis, much of the new money created is finding its way to households and businesses (figure B1) and a statistical connection between broad money growth and inflation appears at longer term horizons (see King, 2002).

Figure B1. Growth in household and business holdings of money during four rounds of QE



Source: Bank of England.

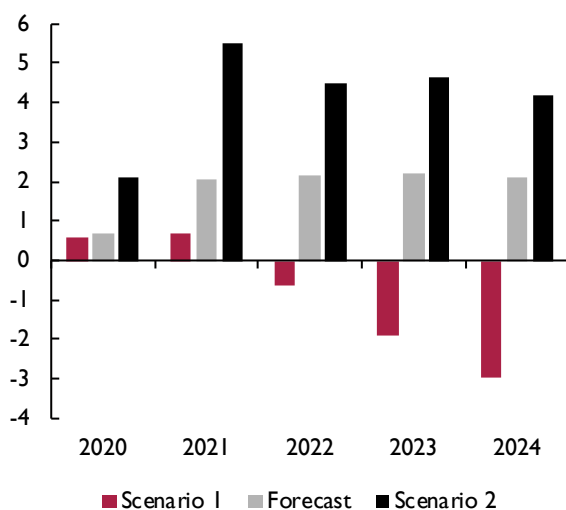
### Box B. (continued)

To look at this possibility we create a stylised shock representing a faster pick-up in demand, perhaps due to positive news about a vaccine; at the same time the permanent effects of Covid-19 on supply are slightly larger than in our main-case scenario. Consumption recovers more quickly – 3 per cent above our main-case scenario this year and next – as the virus comes under control more quickly, confidence returns and households spend some of the money which has been saved. Meanwhile the productivity impacts of Covid-19 (discussed elsewhere and in our May Review: safer working conditions, home-working, etc) impose slightly bigger costs on production, reducing productivity, which temporarily returns to 2018 levels, while sterling devalues by 1 per cent from 2021Q1 as a result of a ‘Hard Brexit’ or lower demand for UK exports in post-Covid supply chains. Again, this is only one potential scenario, but a plausible one.

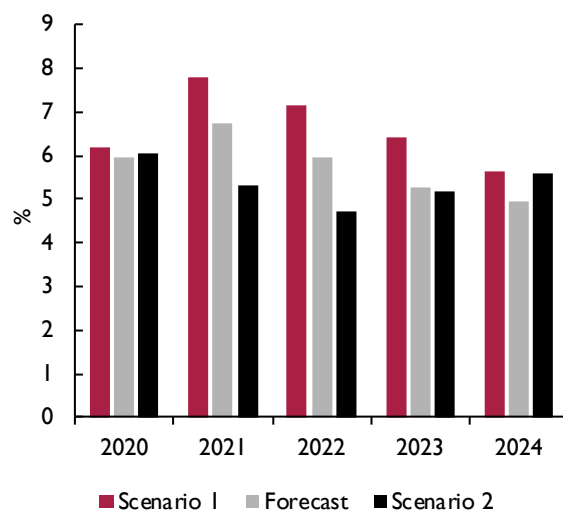
Unsurprisingly the initial effect is that the ‘bounceback’ of inflation is more rapid than in the main-case forecast scenario, with consumer inflation above target in 2021 inviting a response from the Monetary Policy Committee. With unemployment remaining

Figure B2. Scenario results: annual averages

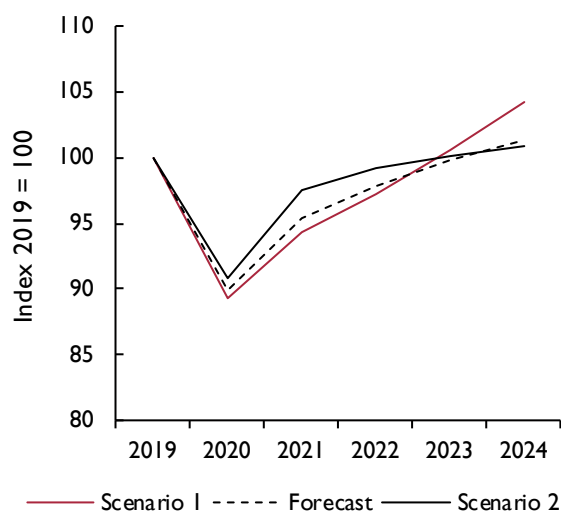
CPI inflation rate



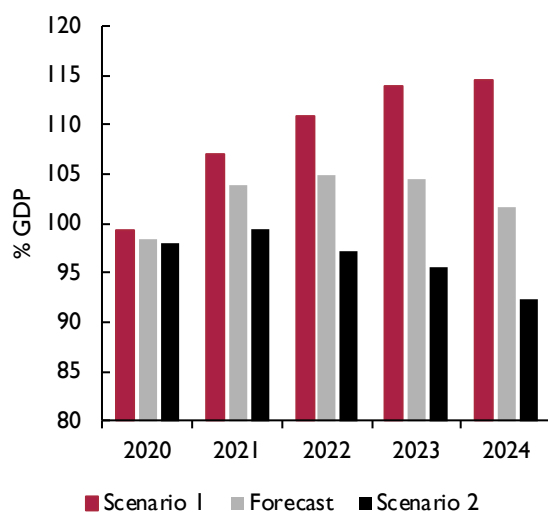
ILO unemployment



Real GDP



Government debt



Source: NiGEM database and NIESR forecast.

## Box B. (continued)

well above pre-Covid-19 levels throughout and many households and businesses (and government) having taken on debt to get through lockdown, the MPC may be under pressure not to raise rates (as noted by Goodhart, Blanchard, 2020, and Allen, 2020). As a result, we assume that interest rates are held at their current level until the end of 2021; thereafter they react. This delay leads to inflation close to 5 per cent for a prolonged period. Government debt is eroded much more quickly to around 92 per cent by 2024. Of course, this is only one potential scenario: interest rates could rise much more sharply, with consequences for the economy.

### Conclusions

Is there any sign of either scenario being reflected in inflation expectations? The Bank of England/TNS Inflation Attitudes survey undertaken in May found that households' expected inflation in one to two years' time declined from 2.9 per cent in February to 1.9 per cent in May, while expectations for five years' time declined from 3.4 per cent to 2.6 per cent. Financial markets' implied 5-year expected inflation declined from about 3 per cent in the first two months of 2020 to 2.5 per cent in March, before rebounding to about 2.75 per cent in June. (For comparison this measure fell to -1 per cent in the UK in November and December 2008.) 30-year expected inflation is just 0.25 percentage points higher than the 5-year at 3 per cent.

There appears as yet no evidence of dislodged inflation expectations which could outweigh the need to err on the side of providing all the monetary support the economy needs now, though it would be wise to keep the possibility of both scenarios on the radar. It may also be worth noting that the effects on the UK economy could be less significant if similar dynamics were to take hold in other countries at the same time.

\*Thanks to Cyrille Lenoel and Corrado Macchiarelli for additional material.

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 Blanchard, O. (2020), 'High inflation is unlikely but not impossible in advanced economies', Peterson Institute for International Economics, April.  
 Goodhart, C. and Needham, D. (2020), 'The need to issue long-dated gilts', *VoxEU.org*, May  
 King, M. (2002), 'No money, no inflation – the role of money in the economy', *Bank of England Quarterly Bulletin*, Summer.

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

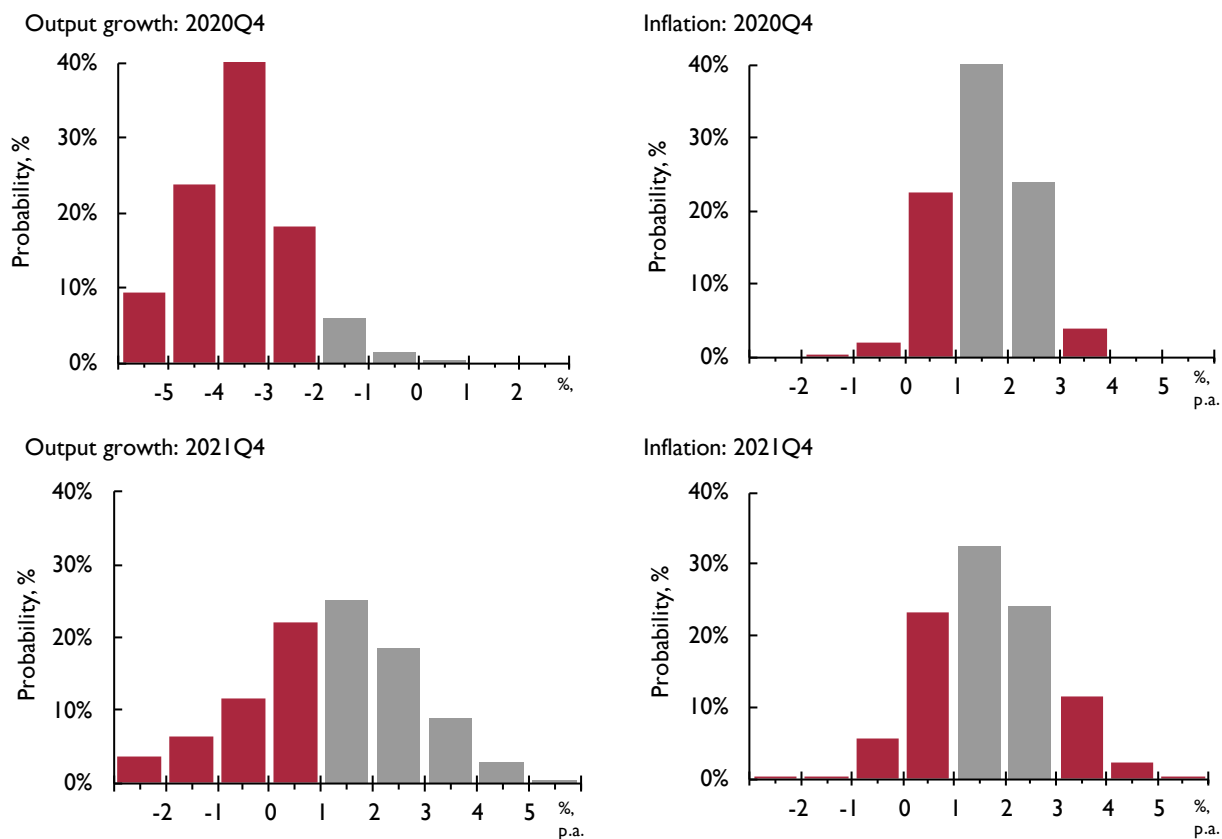
by Ana Galvão, Anthony Garratt and James Mitchell

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).<sup>1</sup>

The figure below presents WBSFS's latest (as of 16 July 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 2020Q1 and data on CPI inflation up to June 2020.

Table CI 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 CI. 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 C. (continued)****Table C1. 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%)
<b>Updated forecasts (July 2020)</b>						
2020Q4	100%	100%	100%	28%	25%	4%
2021Q4	22%	44%	69%	44%	29%	14%
<b>Previous judgement-enhanced forecasts (April 2020)</b>				<b>Previous forecasts (April 2020)</b>		
2020Q4	100%	100%	100%	45%	39%	7%
2021Q4	2%	8%	24%	48%	35%	13%

Our previous forecasts for output growth (reported in the April Review) involved tilting the forecast densities from the WBSFS to condition on the consensus judgement-based forecasts of a group of experts (hence they are called ‘judgement enhanced’ in table C1). The motivation for tilting was that, at the time we made these forecasts, the data that fed into the WBSFS were largely “slow moving” (see McCracken, 2020) and so did not reflect the then recent onset of Covid-19. So to try and understand the large shock to the economy stemming from the coronavirus pandemic, we compared the forecasts produced mechanically from the WBSFS with those conditioned on the combined judgement-based forecasts of others, whose information set was likely more up-to-date. However, in this Review, as even ‘slow moving’ data (such as official estimates of GDP) now capture aspects of the economic recession caused by the shutdown, we revert to production of our forecasts using the WBSFS alone – without any intervention. Therefore, the WBSFS forecasts again represent the 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 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.

Looking at table C1, we see that the WBSFS now forecasts negative output growth for 2020Q4 with a 100 per cent probability, as was the case only after tilting in April. The forecast histogram for GDP growth tells us more about the forecasted contraction in 2020Q4. While the probability of output growth less than –2 per cent is 93 per cent, the most likely interval is between –3 per cent and –4 per cent, with a probability of 42 per cent. The WBSFS also assigns a 9 per cent chance of growth less than 5 per cent for 2020Q4. This indicates that (‘slow moving’) economic data of the sort typically used in macroeconomic forecasting models, like the WBSFS, continue to struggle to pick up the more severe downturn forecast by professional forecasters and organisations, such as the OBR, who make judgements or form scenarios about the nature of the UK’s recovery from the pandemic.

Extending the forecast horizon to 2021Q4, we observe in table C1 a higher chance that the economic contraction continues into 2021 compared to the tilting exercise conducted in April. The WBSFS now forecasts a 22 per cent chance of negative output growth, compared to the 2 per cent forecast in April. Relative to this year, the WBSFS is predicting a recovery in GDP in 2021. But the extent of this recovery is limited: the WBSFS is not forecasting a sharp V-shaped recession as, for example, predicted by the IMF.

The inflation forecasts for 2020Q4, relative to April, suggest a shift towards slightly higher inflationary prospects. For example, the probability of inflation less than 1 per cent has fallen from 39 per cent to 25 per cent. Inflation prospects for 2021Q4 remain similar to those predicted in April, albeit with moderately elevated risks on the upside.

**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\\_forecasting\\_system.pdf](https://www2.warwick.ac.uk/fac/soc/wbs/subjects/emf/forecasting/summary_of_wbs_forecasting_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 <sup>(a)</sup>	Bank Rate <sup>(b)</sup>
2014	110.7	1.65	1.24	3551	0.50	2.50	0.90	0.50
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	101.6	1.26	1.13	3462	0.30	0.30	0.90	0.10
2021	101.0	1.26	1.12	4016	0.20	0.50	0.70	0.10
2022	101.3	1.26	1.12	4350	0.20	1.00	0.80	0.10
2023	101.7	1.27	1.11	4198	0.40	1.30	1.00	0.40
2024	102.0	1.28	1.11	4216	0.70	1.60	1.30	0.66
2019 Q1	102.5	1.30	1.15	3846	0.90	1.20	2.30	0.75
2019 Q2	102.0	1.29	1.14	3999	0.80	1.00	2.30	0.75
2019 Q3	98.5	1.23	1.11	4001	0.80	0.60	2.10	0.75
2019 Q4	103.2	1.29	1.16	4024	0.80	0.70	1.70	0.75
2020 Q1	103.2	1.28	1.16	3787	0.70	0.50	1.40	0.61
2020 Q2	101.3	1.24	1.13	3279	0.40	0.20	0.70	0.10
2020 Q3	100.8	1.26	1.12	3389	0.10	0.10	0.70	0.10
2020 Q4	100.9	1.26	1.12	3393	0.20	0.30	0.70	0.10
2021 Q1	100.9	1.26	1.12	3542	0.20	0.40	0.70	0.10
2021 Q2	101.0	1.26	1.12	3871	0.20	0.50	0.70	0.10
2021 Q3	101.0	1.26	1.12	4240	0.20	0.60	0.70	0.10
2021 Q4	101.1	1.26	1.12	4410	0.20	0.70	0.70	0.10
<i>Percentage changes</i>								
2014/2013	7.6	5.3	5.4	4.3				
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	0.0	-1.3	-0.9	-12.7				
2021/2020	-0.6	0.1	-1.2	16.0				
2022/2021	0.3	0.2	-0.1	8.3				
2023/2022	0.4	0.4	-0.1	-3.5				
2024/2023	0.4	0.5	-0.2	0.4				
2019Q4/18Q4	2.1	0.1	3.2	5.7				
2020Q4/19Q4	-2.3	-2.1	-3.9	-15.7				
2021Q4/20Q4	0.2	0.1	-0.1	30.0				

Notes: We assume that bilateral exchange rates for the third quarter of this year are the average of data available to 17 July 2020. (a) Weighted average of central bank intervention rates in OECD economies. (b) End of period.

Table A2. Price indices

2016=100

	Unit labour costs	Imports deflator	Exports deflator	World oil price (\$) <sup>(a)</sup>	Consump- tion deflator	GDP deflator (market prices)	RPI <sup>(b)</sup>	Consumer prices CPI <sup>(c)</sup> CPIH <sup>(d)</sup>	
2014	97.5	102.2	99.8	98.4	98.6	97.3	97.3	99.3	98.7
2015	97.9	96.9	96.0	52.1	98.6	97.9	98.3	99.4	99.0
2016	100.0	100.0	100.0	42.9	100.0	100.0	100.0	100.0	100.0
2017	102.3	105.4	104.5	54.0	101.4	101.9	103.6	102.7	102.6
2018	105.4	108.4	107.7	70.4	104.1	104.1	107.0	105.2	104.9
2019	108.6	109.5	109.6	63.7	105.5	106.0	109.8	107.1	106.8
2020	109.2	108.8	108.6	42.4	106.2	107.7	110.3	107.9	107.9
2021	114.7	111.6	111.2	50.6	108.4	110.0	113.3	109.9	110.1
2022	116.5	113.2	113.4	54.3	110.7	112.7	117.2	112.3	112.5
2023	119.2	114.1	115.4	55.3	113.1	115.7	121.1	114.7	114.9
2024	122.3	115.4	117.4	56.2	115.5	118.6	125.1	117.1	117.3
<i>Percentage changes</i>									
2014/2013	0.1	-3.5	-1.6	-8.7	1.5	1.8	2.4	1.4	1.5
2015/2014	0.4	-5.2	-3.8	-47.0	0.0	0.6	1.0	0.1	0.4
2016/2015	2.2	3.2	4.2	-17.7	1.4	2.1	1.7	0.7	1.0
2017/2016	2.3	5.4	4.5	25.8	1.4	1.9	3.6	2.7	2.6
2018/2017	3.0	2.8	3.1	30.5	2.6	2.1	3.3	2.4	2.3
2019/2018	3.0	1.0	1.7	-9.6	1.3	1.9	2.6	1.8	1.7
2020/2019	0.6	-0.6	-0.9	-33.4	0.7	1.6	0.5	0.7	1.1
2021/2020	5.0	2.5	2.4	19.3	2.0	2.2	2.7	1.9	2.0
2022/2021	1.6	1.5	2.0	7.2	2.2	2.5	3.4	2.1	2.1
2023/2022	2.3	0.8	1.8	1.8	2.2	2.7	3.4	2.2	2.2
2024/2023	2.6	1.1	1.7	1.7	2.1	2.5	3.2	2.1	2.1
2019Q4/18Q4	2.7	-0.7	0.9	-8.1	1.0	1.8	2.2	1.5	1.4
2020Q4/19Q4	-1.4	0.2	-1.2	-29.1	0.8	1.6	0.1	0.4	1.0
2021Q4/20Q4	6.1	2.7	2.7	22.0	2.4	2.6	3.7	2.4	2.4

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, 2016 prices

	Final consumption expenditure		Gross capital formation		Domestic demand	Total exports <sup>(c)</sup>	Total final expenditure	Total imports <sup>(c)</sup>	Net trade	GDP at market prices <sup>(d)</sup>
	Households & NPISH <sup>(a)</sup>	General gov.	Gross fixed in-vestment	Changes in inventories <sup>(b)</sup>						
2014	1217	371	320	21	1925	532	2458	545	-13	1913
2015	1253	378	332	16	1980	552	2533	575	-22	1958
2016	1299	382	344	4	2028	568	2595	600	-32	1996
2017	1328	383	349	-8	2052	602	2654	621	-19	2033
2018	1349	384	349	-2	2079	610	2689	633	-24	2061
2019	1362	397	351	1	2111	640	2751	663	-22	2091
2020	1154	423	301	-1	1877	496	2373	496	0	1881
2021	1300	410	324	6	2040	563	2603	611	-48	1996
2022	1345	389	349	6	2089	601	2690	647	-47	2046
2023	1377	397	356	6	2136	622	2758	674	-52	2088
2024	1403	404	359	6	2171	638	2810	695	-57	2119
<i>Percentage changes</i>										
2014/2013	2.3	2.0	6.6		3.4	1.0	2.9	3.6		2.6
2015/2014	3.0	1.8	3.7		2.9	3.8	3.1	5.4		2.4
2016/2015	3.6	1.0	3.6		2.4	2.7	2.5	4.4		1.9
2017/2016	2.2	0.3	1.6		1.2	6.1	2.3	3.5		1.9
2018/2017	1.6	0.4	-0.2		1.3	1.2	1.3	2.0		1.3
2019/2018	1.0	3.4	0.7		1.5	5.0	2.3	4.6		1.5
2020/2019	-15.2	6.4	-14.3		-11.1	-22.5	-13.8	-25.1		-10.1
2021/2020	12.6	-3.0	7.6		8.7	13.5	9.7	23.2		6.1
2022/2021	3.5	-5.2	7.9		2.4	6.7	3.3	5.9		2.5
2023/2022	2.4	2.0	2.0		2.2	3.6	2.5	4.1		2.0
2024/2023	1.9	1.7	0.9		1.7	2.6	1.9	3.1		1.5
<i>Decomposition of growth in GDP (percentage points)</i>										
2014	1.5	0.4	1.1	0.3	3.4	0.3	3.7	-1.1	-0.7	2.6
2015	1.9	0.3	0.6	-0.3	2.9	1.1	3.9	-1.5	-0.5	2.4
2016	2.3	0.2	0.6	-0.6	2.4	0.8	3.2	-1.3	-0.5	1.9
2017	1.4	0.0	0.3	-0.6	1.2	1.7	2.9	-1.0	0.7	1.9
2018	1.0	0.1	0.0	0.3	1.4	0.4	1.7	-0.6	-0.2	1.3
2019	0.6	0.6	0.1	0.1	1.5	1.5	3.0	-1.4	0.1	1.5
2020	-9.9	1.2	-2.4	-0.1	-11.2	-6.9	-18.1	8.0	1.1	-10.1
2021	7.8	-0.7	1.2	0.4	8.7	3.6	12.2	-6.1	-2.6	6.1
2022	2.3	-1.1	1.3	0.0	2.5	1.9	4.4	-1.8	0.1	2.5
2023	1.6	0.4	0.3	0.0	2.3	1.1	3.3	-1.3	-0.2	2.0
2024	1.2	0.3	0.1	0.0	1.7	0.8	2.5	-1.0	-0.2	1.5

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 <sup>(a)</sup>	Imports of goods <sup>(a)</sup>	Net trade in goods <sup>(a)</sup>	Exports of services	Imports of services	Net trade in services	Export price competitive- ness <sup>(c)</sup>	World trade <sup>(d)</sup>	Terms of trade <sup>(e)</sup>	Current balance
	£ billion, 2016 prices <sup>(b)</sup>						2016=100	% of GDP		
2014	286	397	-111	247	148	99	106.9	91.7	97.6	-4.7
2015	301	413	-112	251	162	90	105.6	96.7	99.1	-4.9
2016	298	432	-134	270	168	102	100.0	100.0	100.0	-5.2
2017	317	445	-128	285	176	109	96.6	105.0	99.1	-3.5
2018	316	445	-129	293	188	105	100.1	108.1	99.4	-3.9
2019	332	454	-122	308	208	100	98.8	112.6	100.1	-4.0
2020	251	341	-90	245	155	90	97.3	95.5	99.8	-2.2
2021	297	440	-142	266	171	94	98.8	110.8	99.6	-3.9
2022	320	475	-155	281	173	108	99.9	118.1	100.2	-3.6
2023	331	500	-168	291	174	117	100.7	123.6	101.1	-3.7
2024	340	518	-179	299	176	122	101.2	128.1	101.8	-3.9
<i>Percentage changes</i>										
2014/2013	1.1	2.9		1.0	5.8		4.0	4.6	2.0	
2015/2014	5.4	4.1		1.8	9.1		-1.2	5.4	1.5	
2016/2015	-1.2	4.6		7.3	3.8		-5.3	3.5	0.9	
2017/2016	6.3	2.9		5.9	5.1		-3.4	5.0	-0.9	
2018/2017	-0.2	0.1		2.8	6.9		3.6	2.9	0.3	
2019/2018	5.0	2.1		5.1	10.7		-1.2	4.2	0.7	
2020/2019	-24.4	-24.8		-20.5	-25.8		-1.6	-15.2	-0.3	
2021/2020	18.5	28.8		8.4	10.8		1.6	16.0	-0.1	
2022/2021	7.6	7.9		5.7	0.7		1.1	6.6	0.6	
2023/2022	3.6	5.3		3.7	1.0		0.8	4.6	1.0	
2024/2023	2.5	3.8		2.7	1.1		0.5	3.7	0.7	

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 <sup>(a)</sup> earnings	Compen- sation of employees	Total personal income	Gross disposable income	Real disposable income <sup>(b)</sup>	Final consumption expenditure	Saving ratio <sup>(c)</sup>	House prices <sup>(d)</sup>	Net worth to income ratio <sup>(e)</sup>
	2016=100	£ billion, current prices			£ billion, 2016 prices		per cent		
2014	96.4	905	1591	1256	1273	1217	9.4	97.1	6.5
2015	97.0	929	1674	1323	1341	1253	9.9	102.9	6.6
2016	100.0	968	1715	1346	1346	1299	7.2	110.1	7.1
2017	103.1	1009	1772	1383	1363	1328	5.3	115.1	7.1
2018	106.0	1054	1856	1453	1395	1349	5.8	118.8	6.8
2019	110.1	1101	1919	1490	1412	1362	5.8	120.1	6.9
2020	101.6	998	1869	1463	1378	1154	17.8	115.5	6.8
2021	113.7	1110	1990	1563	1443	1300	11.1	115.9	7.0
2022	116.8	1156	2050	1610	1455	1345	8.7	122.7	6.9
2023	120.4	1207	2133	1675	1481	1377	8.1	126.5	6.7
2024	124.3	1257	2219	1743	1509	1403	8.0	128.6	6.5
<i>Percentage changes</i>									
2014/2013	1.0	2.7	3.4	3.6	2.1	2.3		8.0	
2015/2014	0.6	2.7	5.2	5.3	5.3	3.0		6.0	
2016/2015	3.1	4.1	2.5	1.8	0.4	3.6		7.0	
2017/2016	3.1	4.3	3.3	2.7	1.3	2.2		4.5	
2018/2017	2.8	4.4	4.8	5.0	2.4	1.6		3.3	
2019/2018	3.9	4.5	3.3	2.5	1.2	1.0		1.0	
2020/2019	-7.7	-9.4	-2.6	-1.8	-2.4	-15.2		-3.8	
2021/2020	11.9	11.3	6.5	6.8	4.7	12.6		0.4	
2022/2021	2.7	4.2	3.0	3.0	0.8	3.5		5.8	
2023/2022	3.1	4.4	4.0	4.0	1.8	2.4		3.1	
2024/2023	3.2	4.1	4.1	4.1	1.9	1.9		1.7	

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, 2016 prices

	Gross fixed investment				User cost of capital (%)	Corporate profit share of GDP (%)	Capital stock	
	Business investment	Private housing <sup>(a)</sup>	General government	Total			Private	Public <sup>(b)</sup>
2014	175	82	63	320	14.5	24.9	3075	667
2015	188	84	60	332	13.5	24.5	3077	667
2016	196	86	62	344	13.0	24.4	3195	697
2017	202	84	64	349	11.7	24.4	3280	632
2018	199	90	60	349	12.1	23.8	3333	647
2019	200	90	61	351	12.1	23.4	3379	658
2020	164	80	57	301	12.5	24.0	3357	664
2021	175	81	68	324	12.1	22.0	3349	681
2022	189	81	79	349	11.5	22.9	3357	707
2023	192	81	83	356	12.0	23.4	3367	735
2024	194	81	85	359	12.3	23.5	3378	763
<i>Percentage changes</i>								
2014/2013	6.4	5.4	8.6	6.6			1.2	2.5
2015/2014	7.2	2.3	-4.4	3.7			0.1	0.0
2016/2015	4.3	3.3	2.2	3.6			3.8	4.5
2017/2016	2.9	-2.4	3.2	1.6			2.7	-9.3
2018/2017	-1.5	6.5	-5.1	-0.2			1.6	2.4
2019/2018	0.8	0.0	1.0	0.7			1.4	1.7
2020/2019	-18.0	-11.1	-7.0	-14.3			-0.7	0.9
2021/2020	6.7	1.3	19.3	7.6			-0.2	2.5
2022/2021	7.8	0.6	16.7	7.9			0.2	3.8
2023/2022	1.5	-0.2	5.4	2.0			0.3	4.0
2024/2023	1.0	-0.6	2.0	0.9			0.3	3.8

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 unemploy- ment	Labour force <sup>(b)</sup>	Population of working age <sup>(c)</sup>	Productivity (2016=100) Per hour	ILO unemployment rate %
	Employees	Total <sup>(a)</sup>					
2014	25960	30754	2026	32780	40681	98.8	6.2
2015	26504	31285	1781	33066	40879	99.4	5.4
2016	26771	31744	1633	33377	41062	100.0	4.9
2017	27065	32057	1476	33533	41169	100.9	4.4
2018	27494	32439	1380	33819	41260	101.4	4.1
2019	27652	32799	1306	34105	41344	101.5	3.8
2020	27187	32354	2050	34404	41442	103.0	6.0
2021	27004	32187	2322	34509	41530	99.3	6.7
2022	27391	32596	2060	34656	41602	100.4	5.9
2023	27742	32969	1832	34801	41668	101.2	5.3
2024	27976	33224	1725	34949	41734	101.8	4.9
<i>Percentage changes</i>							
2014/2013	1.7	2.4	-18.1	0.8	0.3	-0.2	
2015/2014	2.1	1.7	-12.1	0.9	0.5	0.6	
2016/2015	1.0	1.5	-8.3	0.9	0.4	0.6	
2017/2016	1.1	1.0	-9.6	0.5	0.3	0.9	
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	0.1	
2020/2019	-1.7	-1.4	57.0	0.9	0.2	1.5	
2021/2020	-0.7	-0.5	13.3	0.3	0.2	-3.6	
2022/2021	1.4	1.3	-11.3	0.4	0.2	1.1	
2023/2022	1.3	1.1	-11.1	0.4	0.2	0.8	
2024/2023	0.8	0.8	-5.9	0.4	0.2	0.6	

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 2016-based population projections by the ONS.

Table A8. Public sector financial balance and borrowing requirement

£ billion, fiscal years

		2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25
Current receipts:	Taxes on income	446.3	471.3	484.6	403.8	499.3	535.4	561.6	588.3
	Taxes on expenditure	265.9	276.3	273.9	224.2	262.6	276.9	289.1	300.6
	Other current receipts	66.2	62.5	66.2	75.3	82.9	87.3	91.3	94.8
Total		778.3	810.1	824.7	703.3	844.8	899.7	942.0	983.7
(as a % of GDP)		37.3	37.4	37.2	34.9	38.1	38.5	38.6	38.8
Current expenditure:	Goods and services	388.0	400.3	423.3	494.1	462.6	469.7	493.2	515.8
	Net social benefits paid	236.8	242.4	241.5	351.5	294.2	283.5	286.1	294.6
	Debt interest	62.1	56.4	55.4	54.0	54.6	55.0	55.6	56.3
	Other current expenditure	54.9	59.7	64.4	62.1	66.6	69.6	72.5	75.1
Total		741.8	758.8	784.6	961.7	877.9	877.7	907.3	941.7
(as a % of GDP)		35.6	35.0	35.4	48.0	39.6	37.6	37.2	37.1
Depreciation		49.0	48.8	49.4	46.2	51.2	53.9	56.3	58.5
Surplus on public sector current budget <sup>(a)</sup>		-12.4	2.5	-9.3	-304.7	-84.3	-32.0	-21.5	-16.5
(as a % of GDP)		-0.6	0.1	-0.4	-15.4	-3.8	-1.4	-0.9	-0.7
Gross investment		92.1	91.2	93.9	80.8	98.4	109.0	112.5	115.5
Net investment		43.1	42.4	44.5	34.6	47.2	55.1	56.2	57.0
(as a % of GDP)		2.1	2.0	2.0	1.7	2.1	2.4	2.3	2.2
Total managed expenditure		833.9	850.0	878.4	1042.5	976.3	986.7	1019.8	1057.2
(as a % of GDP)		40.0	39.3	39.6	52.0	44.0	42.2	41.8	41.7
Public sector net borrowing		55.5	39.9	53.7	339.3	131.5	87.1	77.7	73.6
(as a % of GDP)		2.7	1.8	2.4	17.1	5.9	3.7	3.2	2.9
Public sector net debt (% of GDP) <sup>(b)</sup>		82.5	81.0	106.6	104.3	104.8	104.5	102.3	98.2
GDP deflator at market prices (2016=100)		102.4	104.5	106.6	108.1	110.6	113.5	116.5	119.3
Money GDP (£ billion)		2087	2165	2218	2014	2220	2337	2442	2537
Financial balance under Maastricht <sup>(c)</sup>		-2.5	-2.3	-2.2	-14.9	-7.9	-4.0	-3.3	-3.0
Gross debt under Maastricht <sup>(c)</sup>		85.5	85.0	84.6	107.0	106.4	105.0	103.4	102.3

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 <sup>(a)</sup>		Net national saving
	Saving	Investment	Saving	Investment	Saving	Investment	Saving	Investment	Total	Net factor income	
2014	6.7	3.7	8.0	10.8	-2.3	2.6	12.4	17.1	4.7	2.0	-1.8
2015	7.1	3.9	6.5	11.0	-1.1	2.5	12.5	17.4	4.9	2.2	-1.8
2016	5.0	3.9	7.2	11.0	0.0	2.5	12.2	17.4	5.2	2.3	-2.1
2017	3.7	4.1	9.4	10.9	1.0	2.6	14.0	17.5	3.5	1.1	-0.4
2018	4.0	4.3	8.0	10.3	1.3	2.6	13.3	17.2	3.9	1.2	-1.3
2019	4.0	4.3	7.9	10.3	1.4	2.7	13.3	17.3	4.0	1.6	-1.5
2020	13.2	4.2	12.3	8.7	-11.9	2.9	13.6	15.8	2.2	0.8	-1.6
2021	8.0	4.0	9.1	9.2	-4.5	3.3	12.6	16.5	3.9	0.1	-2.6
2022	6.1	3.9	7.7	9.7	-0.1	3.7	13.7	17.3	3.6	0.1	-1.5
2023	5.6	3.8	7.2	9.6	0.7	3.8	13.6	17.3	3.7	0.4	-1.7
2024	5.6	3.7	6.6	9.6	1.0	3.8	13.2	17.1	3.9	0.6	-2.0

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

	2018	2019	2020	2021	2022	2023	2024	2025-29
GDP (market prices)	1.3	1.5	-10.1	6.1	2.5	2.0	1.5	1.2
Average earnings	2.8	3.9	-7.7	11.9	2.7	3.1	3.2	3.0
GDP deflator (market prices)	2.1	1.9	1.6	2.2	2.5	2.7	2.5	2.0
Consumer Prices Index	2.4	1.8	0.7	1.9	2.1	2.2	2.1	1.8
Per capita GDP	0.7	0.9	-10.6	5.5	2.0	1.5	1.0	0.8
Whole economy productivity <sup>(a)</sup>	0.5	0.1	1.5	-3.6	1.1	0.8	0.6	0.9
Labour input <sup>(b)</sup>	0.8	1.4	-10.8	9.6	1.3	1.2	0.8	0.3
ILO Unemployment rate (%)	4.1	3.8	6.0	6.7	5.9	5.3	4.9	5.0
Current account (% of GDP)	-3.9	-4.0	-2.2	-3.9	-3.6	-3.7	-3.9	-4.0
Total managed expenditure (% of GDP)	39.4	39.2	50.4	45.1	42.4	41.8	41.7	42.5
Public sector net borrowing (% of GDP)	2.2	2.0	14.8	7.9	3.9	3.3	2.9	2.7
Public sector net debt (% of GDP)	82.4	80.9	98.5	104.0	104.8	104.4	101.6	96.6
Effective exchange rate (2011=100)	101.9	101.6	101.6	101.0	101.3	101.6	102.0	103.2
Bank Rate (%)	0.6	0.8	0.2	0.1	0.1	0.3	0.6	1.3
3 month interest rates (%)	0.7	0.8	0.3	0.2	0.2	0.4	0.7	1.4
10 year interest rates (%)	1.4	0.9	0.3	0.5	1.0	1.3	1.6	2.5

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