PROSPECTS FOR THE UK ECONOMY
Arno Hantzsche and Garry Young*

Section 1. Forecast overview and policy recommendations

The economic outlook is clouded by significant economic and political uncertainty: a general election is widely expected and Brexit remains unresolved. The outlook depends critically on the nature of the trading relationship between the United Kingdom and the European Union and other countries. Despite the progress that the government has made in agreeing a new withdrawal agreement and political declaration with the EU, the rules that will govern trade even a relatively short period ahead remain unclear. In particular, even assuming that a no-deal Brexit is avoided, it is doubtful that a free-trade agreement (FTA) will be negotiated by the end of 2020 when the transition period in the withdrawal agreement comes to an end.[1]

This means that the elevated levels of Brexit-related uncertainty that have hindered forward planning over the past three or more years are likely to persist into the medium term and continue to sap the dynamism of the economy. This applies especially to decision making in the business sector where there is clear evidence of investment spending being deferred while senior executives have been focusing on contingency planning that may ultimately prove wasteful. But it also applies to the government sector where the fiscal framework is in disarray. The Budget scheduled for 6 November has been cancelled. The next Budget, whenever it takes place, needs to put in a place a durable fiscal framework capable of accommodating the long-term needs of society.

Recent developments

Against the background of chronic uncertainty, the UK economy has been expanding only slowly and living standards are only gradually improving. Our latest estimate is that GDP in the third quarter was 1.2 per cent higher than a year earlier, an increase of around 0.8 per cent per head of population. The slow growth rate partly reflects continued weakness in productivity; we estimate that output per hour in the third quarter was no higher than a year earlier. Despite the lack of productivity growth, real wages were 2 per cent higher than a year earlier, partly reflecting a tight labour market, with unemployment below 4 per cent, and some relatively large public sector pay increases. Faster growth in real wages is helping to support consumer spending.

It is not clear how long the current pace of expansion can continue. Real wages cannot continue to grow at recent rates without a pick-up in productivity growth. And productivity growth is unlikely to pick up without more investment, and that has been held back by chronic uncertainty. There are now some signs that the labour market is beginning to turn, with employment falling by 56,000 in the latest quarter. As discussed at the most recent NIESR Business Conditions Forum, a range of evidence points to falling labour demand.[2] This includes evidence of falling vacancies, subdued hiring and starting salaries beginning to edge down.

Figure 1. Quarterly business investment: actual and post-referendum counterfactual

Source: NIESR.

Figure 2. Quarterly GDP: actual and post-referendum counterfactual
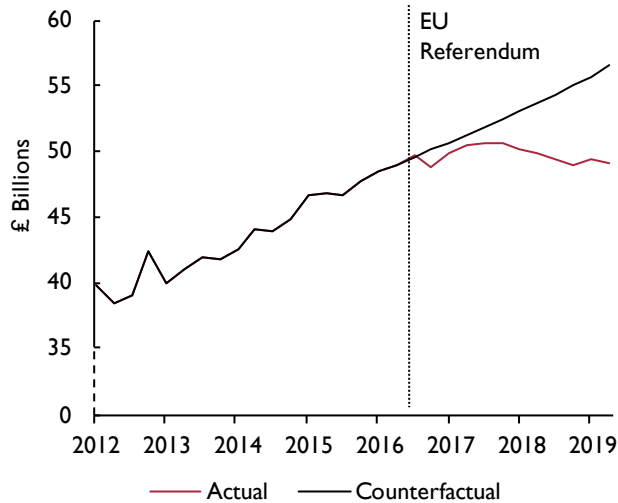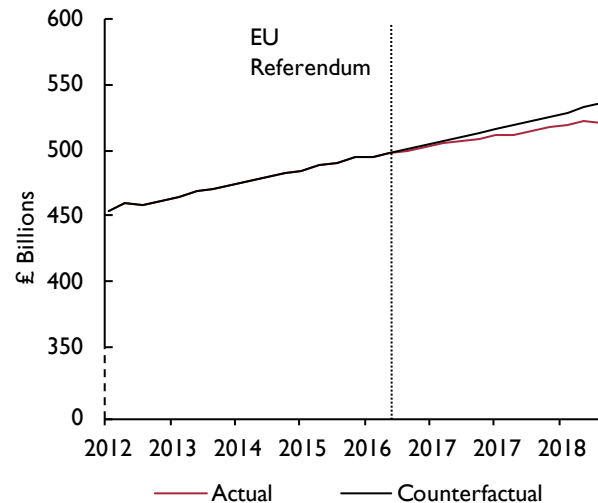

Source: NIESR.

Weak growth at home also partly reflects a slowing global economy. As discussed in the World Economy chapter of this *Review*, we are expecting global growth to be weaker in 2019 and 2020 than in recent years, and the risks appear to be to the downside. The global slowdown is particularly affecting UK businesses that engage in international trade or are part of global supply chains.

Nevertheless, despite a subdued domestic and global picture, it is possible that a swift resolution of the current Brexit-related political crisis could change the outlook for the better in a short space of time. The recent performance of sterling, where the pound rose from a low of $1.20 in early September to more than $1.30 on 21 October, demonstrates the importance of sentiment for economic outcomes.

Figures 1 and 2 illustrate estimates of some of the effects of the Brexit vote on the UK economy in the three years since the EU referendum. As discussed in more detail in section 2, business investment is estimated to be around 15 per cent lower than it would have been had it not been for the 2016 EU Brexit vote (figure 1). This is because businesses have deferred investment projects until there was greater clarity about the future trading relationship and some have moved activities abroad in anticipation of higher barriers to trade. Alongside this, the level of GDP is estimated to be around 2½ per cent lower (figure 2), reflecting lower investment and, relatedly,

lower productivity. This is despite economic activity and measured GDP being boosted to some extent by Brexit-related contingency planning and stockbuilding that has little positive effect on welfare.

The reason that investment has been affected so much by the Brexit vote is that businesses fear that trade with the EU will be sufficiently costly in the future – especially with a no-deal Brexit – that new investment will not pay off. Greater clarity about the future relationship, especially removing the no-deal threat, might encourage some of that postponed investment to take place. But that would depend on the type of deal that is ultimately negotiated. A deal that preserved the current close trading relationship between the UK and EU could result in an upsurge in investment. In contrast, a deal that would make it certain that there would be more trade barriers between the UK and EU in the future would similarly remove the risk of no deal but at the same time eliminate the possibility of closer economic ties, offsetting any boost to economic activity. This is illustrated in a stylised way in figure 3.

We estimate that a Brexit deal that involved a smooth transition to a free trade agreement with the EU, as proposed by the Prime Minister, would ultimately lead the UK economy to be about 3½ per cent smaller than it would have been had the UK remained in the EU. That would be unlikely to encourage a sharp rise in investment (see page F34).

Figure 3. Deal uncertainty and economic growth
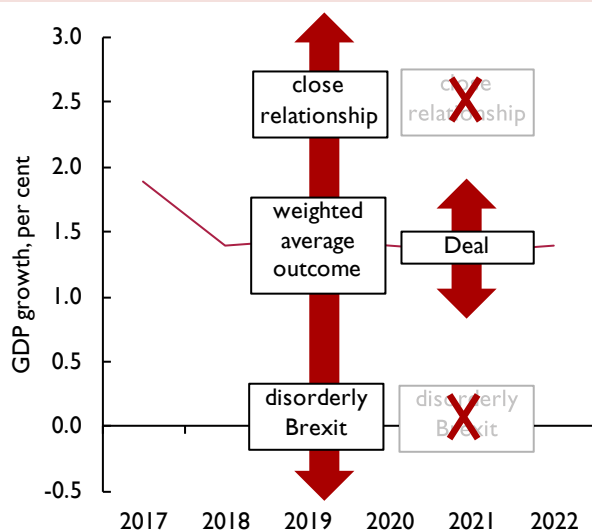
Source: NIESR.
Note: Arrows illustrate the range of possible economic outcomes and thus, the degree of uncertainty.

With the economy already 2½ per cent smaller than it would otherwise have been due to the Brexit vote, does this mean that the estimated 3½ per cent cost of Brexit has already almost been paid? The answer is no. First, and most important, according to our estimate, GDP will be 3½ per cent smaller each year in perpetuity than it would have been had the UK stayed an EU member. This is roughly equivalent to losing the annual output of Wales. Second, the estimated loss of GDP so far is because businesses generally have not been investing, whereas the loss in the future will because certain types of economic activity in the UK will be no longer profitable.

Against this background of continuing uncertainty, in the rest of this chapter we describe our assessment of the economic prospects for the United Kingdom in three main ways.

First, we provide a narrative around a main-case forecast scenario based on a continuation of chronic uncertainty while the UK's trading relationship with the EU remains unchanged in the short term pending the negotiation of the future relationship.

Second, we also describe on pages F34–7 an alternative scenario based on a free-trade agreement with the EU that is negotiated and swiftly comes into force at the beginning of 2021.

Third, we summarise the various risks in fan charts for GDP growth and CPI inflation. Given the wide range of possible paths that the UK economy may take over the next few months, we put most emphasis on the fan charts as a way of describing where the UK economy might be heading.

Main-case forecast scenario
The main-case forecast scenario assumes a prolonged period of political and economic uncertainty while the UK and EU negotiate their future relationship, with no actual change in trading arrangements. In the short term, this is consistent with the UK imminently leaving the EU, followed by an extended transition period while the future free trade agreement is negotiated.

In this main-case forecast scenario, economic conditions are set to continue roughly as they are, with output close to capacity but slow growth as businesses refrain from investment in view of high uncertainty about future trading relations. In this scenario, GDP grows by a little under 1½ per cent in both 2019 and 2020, driven by household and government consumption. Business investment remains weak.

The labour market is tight with unemployment falling to 3.8 per cent of the labour force in the first half of 2019. Wages are now growing at an annual rate of close to 4 per cent. With little productivity growth this means that unit labour costs are growing at an annual rate of around 3 per cent, contributing to domestically-generated inflationary pressure. This is being offset to some extent by slower growth in import prices that would be even weaker if sterling remained at $1.30, the level reached on 21 October. CPI inflation is forecast to remain close to the 2 per cent target.

Unlike many of its major trading partners, the UK has been running a substantial deficit on the current account of the balance of payments for a number of years. This reached a deficit of 4.6 per cent of GDP in the second quarter of 2019. The current account deficit is the counterpart to low national saving relative to investment. The deficit is forecast to decline to less than 3 per cent in 2020 as national saving picks up.

Main-case forecast revisions
The run-up to two potential Brexit deadlines at the beginning of the year and related stockbuilding activity instilled a substantial degree of volatility into the UK economy. We have slightly revised up our main-case forecasts for GDP growth in 2019 and 2020 by about 0.2 percentage points. This largely reflects stronger data

for monthly GDP in the third quarter of 2019 than we had originally forecast and some upward revisions to data for earlier in the year. We have also slightly revised down our forecasts for the unemployment rate in 2019 and 2020 by about 0.1 percentage points. Our forecasts for CPI inflation are largely unchanged.

Box A sets out the performance of our forecasts since the EU referendum in 2016.

Risks

As has been emphasised, there is significant uncertainty around the economic outlook. Our assessment of the various risks to GDP growth and inflation is summarised in figures 4 and 5.

Given the slow underlying growth rate of the UK economy, the continuing risks of a damaging exit from the EU and the fragility of the global economy, we judge that there is around a 15 per cent chance of output growth of less than zero per cent in 2020. This is lower than at the time of our last forecast when we thought there was a 30 per cent chance of negative year-on-year growth in 2020 because of the elevated risk of a no-deal

Brexit. As a result, the fan chart around our main-case GDP growth forecast is somewhat narrower than in our August publication but remains wider than normal. We see the risks to CPI inflation as being roughly symmetric round the 2 per cent target.

These forecast distributions are broadly in agreement with those set out in Box B from the Warwick Business School Forecasting System (WBSFS), which combines state-of-the-art statistical models weighted solely by the forecasting performance of each model.

Monetary and fiscal policy recommendations

Our monetary and fiscal policy recommendations are based on our assessment of the risks to the economy set out in the fan charts shown in figures 4 and 5.

UK monetary policy has been on hold since Bank Rate was raised to 0.75 per cent in August 2018. This is in contrast to other countries where central banks have been more active in changing policy rates. For example, the US Federal Reserve has changed interest rates four times (two increases and two cuts) over the same period, with the federal funds rate now back to where it was

Figure 4. GDP growth fan chart (per cent per annum)
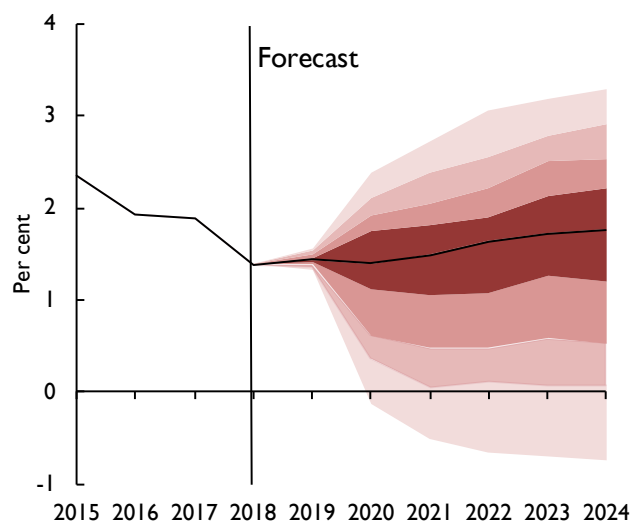
Source: NIESR forecast and judgement.
Note: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. The main-case forecast scenario for GDP growth is close to the median of the forecast distribution. There is a 10 per cent chance that GDP growth in any particular year will lie in any given shaded segment in the chart. There is a 20 per cent chance that GDP growth will lie outside the shaded area of the fan.

Figure 5. Inflation fan chart (per cent per annum)
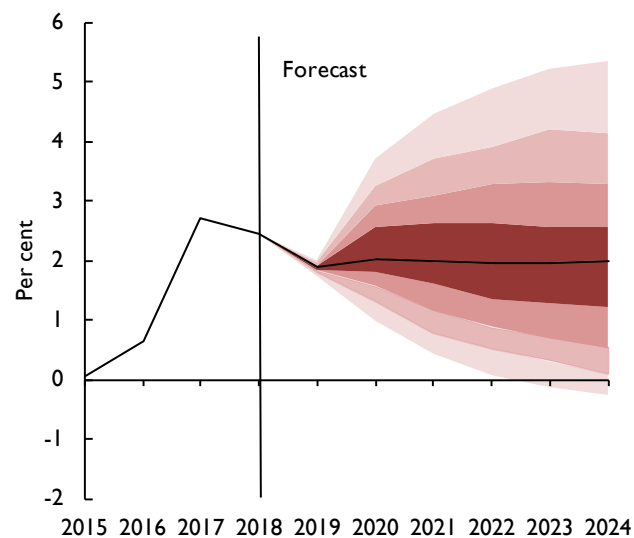
Source: NIESR forecast and judgement.
Note: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. The main-case forecast scenario for CPI inflation is close to the median of the forecast distribution. There is a 10 per cent chance that CPI inflation in any particular year will lie in any given shaded segment in the chart. There is a 20 per cent chance that CPI inflation will lie outside the shaded area of the fan. The Bank of England's CPI inflation target is 2 per cent per annum.

Table 1. Summary of the forecast							Percentage change unless otherwise stated		
	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP	1.9	1.9	1.4	1.4	1.4	1.5	1.6	1.7	1.8
Per capita GDP	1.1	1.3	0.8	0.8	0.8	0.9	1.1	1.2	1.3
CPI Inflation	0.7	2.7	2.4	1.9	2.0	2.0	1.9	2.0	2.0
RPIX Inflation	1.9	3.8	3.3	2.6	2.9	2.7	2.6	2.6	2.6
RPDI	0.4	1.3	2.5	2.1	2.2	2.3	2.2	2.2	2.2
Unemployment, %	4.9	4.4	4.1	3.9	4.0	3.9	3.9	3.9	4.1
Bank Rate, %	0.4	0.3	0.6	0.8	0.6	0.5	0.8	1.1	1.3
Long Rates, %	1.3	1.2	1.4	0.8	0.8	1.2	1.6	1.9	2.2
Effective exchange rate	−10.0	−5.3	2.1	−1.2	−0.5	0.3	0.4	0.1	0.1
Current account as % of GDP	−5.2	−3.5	−4.3	−3.9	−2.8	−2.6	−2.5	−2.3	−2.0
Net borrowing as % of GDP[a]	2.8	2.7	1.9	2.8	3.0	3.0	3.0	2.9	3.0
Net debt as % of GDP[a]	83.2	83.4	81.2	80.9	80.0	78.2	79.6	79.6	79.6

Notes: RPDI is real personal disposable income. PSNB is public sector net borrowing. PSND is public sector net debt. (a) Fiscal year, excludes the impact of financial sector interventions, but includes the flows from the Asset Purchase Facility of the Bank of England. Annual averages unless stated otherwise.

last August. The relative inertia of the Monetary Policy Committee (MPC) is mainly attributable to the stability of CPI inflation around the 2 per cent inflation target, but it probably also reflects an unwillingness on the part of the MPC to make a minor adjustment to policy in one direction when there was a risk that it would have to make a more significant change in the other direction in the event of a no-deal Brexit.

Our assessment is that UK monetary conditions are broadly appropriate at the moment, though there is a reasonable case for a precautionary cut in Bank Rate. As we have discussed, economic growth is weak, but there does not appear to be any obvious deficiency of aggregate demand relative to supply potential and our main-case forecast is for a continuation of slow growth in demand and supply. There is evidence of rising domestically generated inflation with wages growing by around 4 per cent and unit labour costs by 3 per cent. But the upward pressure that this exerts on inflation is not expected to persist and there is already some evidence of a deceleration in wages. There is also the opposite risk, motivating the easing in monetary policy in other countries, that the global outlook is weakening and that inflation will fall further below target. With CPI inflation at 1.7 per cent in August, that risk appears to be building up in the UK. Not to loosen UK monetary policy in these circumstances while other countries are easing risks an appreciation of sterling that could mean that CPI inflation remains below target. This was not an issue when sterling's value was being strongly affected by the possibility of an imminent no-deal Brexit. But with the no-deal risk receding sterling has recently risen to a 6-month high. We would recommend a cut in Bank Rate

to 0.5 per cent at the MPC's next meeting in November, though we expect that the MPC will not cut until March 2020 when evidence of weaker wage pressure is clearer. The assumption of looser monetary policy compared to our previous forecast adds 0.1 and 0.4 percentage points to annual GDP growth in 2020 and 2021, respectively.

While there is active debate about aspects of monetary policy (see Barwell and Chadha, 2019), it is set according to a clear and robust framework. The same cannot be said for fiscal policy. In September, the new Chancellor, Sajid Javid, set out new departmental spending plans for 2020–21 that incorporated a 4 per cent real terms increase in spending. We estimate that higher spending relative to the previous government's plans adds 0.3 and 0.2 percentage points to GDP growth in 2020 and 2021, respectively. Without a new fiscal forecast by the Office for Budgetary Responsibility (OBR) to accompany the announced spending plans, it was not clear whether these were consistent with the government's fiscal rules or not. Our assessment, that takes into account the state of the economy and the new accounting treatment of student loans that adds significantly to the measured public sector deficit, is that they are not. According to our estimates, public sector net borrowing will be 3 per cent of GDP in 2020–21, 1 per cent of GDP higher than is consistent with the fiscal mandate set out by the previous Chancellor, Philip Hammond.

This is not to say that the announced increases in public spending were inappropriate. Indeed, our own analysis is that public spending had been cut too far and that the government would not stick to its previous public

spending plans (Hantzsche and Young, 2018). Our view is that appropriately higher levels of spending should be paid for out of higher taxation rather than additional borrowing.

The Chancellor has announced that the Budget planned for 6 November has been cancelled. In this Budget, the Chancellor was to have set out "our plan to shape the economy for the future and triggering the start of our infrastructure revolution". Whenever the Budget actually takes place it will also need to set out a coherent fiscal framework that can outline long-term plans for public spending, how it will be financed and how fiscal policy can respond to cyclical developments.

Our recommendations would include setting out realistic plans for public spending that recognise the likely role for the state in providing public services when the population is ageing. This is likely to mean increases over time in public spending as a share of GDP that require corresponding increases in taxation. As in previous *Reviews* we recommend that there should be a Comprehensive Tax

Review, aimed at replacing the existing piecemeal and arbitrary approach to taxation with a more principled approach. The Comprehensive Tax Review would aim to ensure that taxes are raised in a fair and efficient manner. Despite the principles of good taxation and a range of recommendations being set out in the Mirrlees Review in 2011, little progress has been made in this area (Mirrlees *et al.*, 2011). A Comprehensive Tax Review along these lines would probably recommend substantial changes including a progressive income tax with a transparent and coherent rate structure, a largely uniform VAT, no transactions taxes such as stamp duty, a carbon tax, a lifetime wealth transfer tax, and a land value tax for business and agricultural land.

More generally, the debate surrounding Brexit has crowded out discussion of sensible economic policy over the past three or more years. The series of articles by John Llewellyn and others later in this *Review* set out some of the policy options that should be urgently considered.

Box A. NIESR's forecast performance since the EU referendum
by Arno Hantzsche

The past three years have been characterised by unprecedented levels of political and economic uncertainty, largely caused by global trade tensions and the 2016 vote to leave the European Union. This box reviews NIESR's forecast performance since the EU referendum. After accurately predicting the immediate response of the UK economy to the referendum result, NIESR's GDP forecasts turned out to be somewhat too pessimistic for 2017. In contrast, growth forecasts for 2018 and 2019 were subsequently revised down as global growth weakened more than expected and Brexit uncertainty lasted for longer than assumed in NIESR's main-case forecast. Overall, forecast errors lie well within usual bounds as reflected in NIESR's fan charts.

To recap, prior to the referendum NIESR produced a forecast scenario for the event of a vote to leave the European Union (Baker *et al.*, 2016, see also Chadha, Johnson and van Reenen, 2016). This scenario foresaw growth weakening in 2016 and 2017 as a result of the referendum, a subsequent depreciation of sterling and a fall in investor confidence, relative to a vote in favour of continued EU membership (black squares in figure A1). This assessment turned out to be in line with realised GDP growth (red line), much more so than predictions made by some other forecasters. In particular, forecasts by HM Treasury (black diamonds) and the IMF (black triangles) turned out to be too pessimistic (black diamonds) while the uptick in economic growth predicted by Economists for Brexit/Free Trade (crosses) was too optimistic (see also Kara and Lenoel, 2017).

Immediately after the EU referendum, NIESR followed other forecasters in revising down UK GDP growth significantly, reacting to a sudden deterioration in short-term indicators, especially business surveys, at the time. In figure A1 this is reflected in the sequence of NIESR forecasts that lie below 2017 growth outturns. In contrast, macroeconomic aggregates responded more slowly to political events. Consumption growth remained robust despite the rise in inflation and the fall in real wages, supported by a reduction in the saving ratio. For instance, the forecast published by NIESR in August 2016 predicted 2017 GDP growth of 1 per cent, 0.9 percentage points less than the outturn, but the uncertainty around that point forecast was reflected in a fan chart assigning a probability of around 30 per cent to growth falling inside the 1–2 per cent bound (Kirby *et al.*, 2016). While a sharp rise in inflation was predicted by NIESR, caused by a fall in the exchange rate and rising import prices, inflation rose by less than expected during 2017 and 2018 (figure A2) as importers did not pass on higher import prices to consumers to the extent anticipated. This may be part of the general puzzle on low inflation that many countries are experiencing. Brexit uncertainty only gradually dampened investment and productivity growth (Bloom *et al.*, 2019). Additional factors that contributed to stronger than expected economic growth in 2017 were upward surprises to global growth (figure A3) including Euro Area growth.

Figure A1. UK GDP growth forecasts
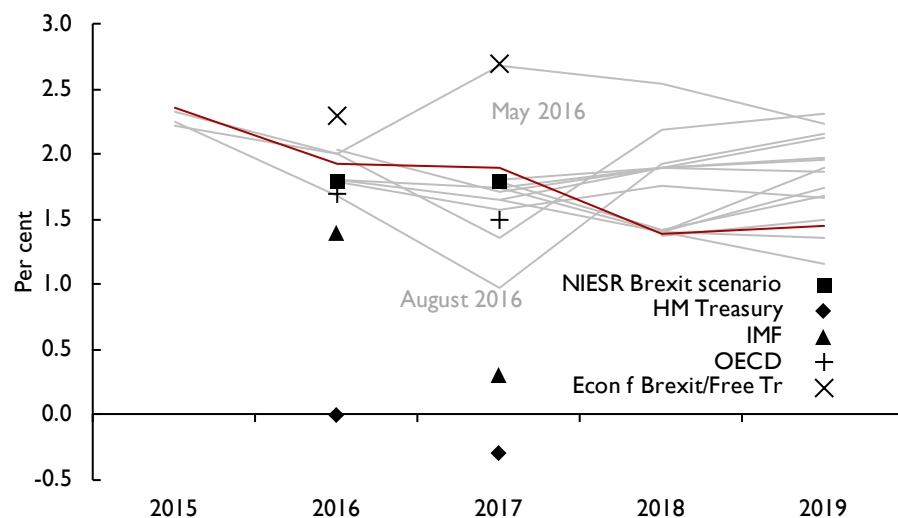
Sources: NIESR, HM Treasury, IMF, OECD, Economists for Brexit/Free Trade.
Notes: The NIESR pre-referendum forecast represents the average of the most optimistic and most pessimistic scenarios. The HM Treasury forecast represents the average of its optimistic and pessimistic forecasts. The red line represents data outturns and NIESR's November 2019 forecast. Grey lines represent consecutive NIESR forecasts made between May 2016 and August 2019.
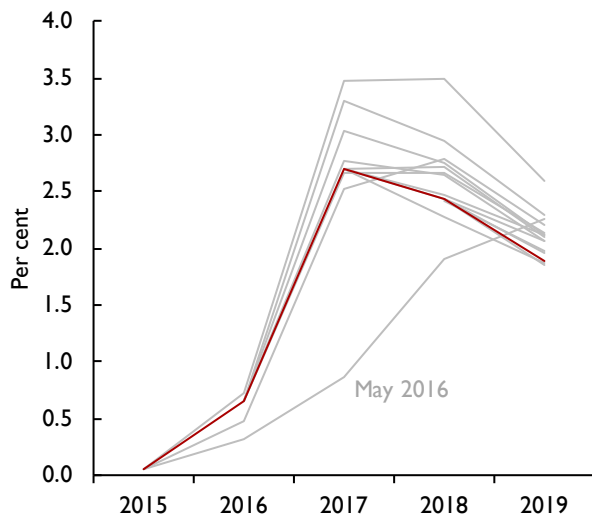
Box A. (continued)

Contrasting with upward surprises to 2017 GDP growth, NIESR's sequence of economic forecasts for 2018 and 2019 turned out to be somewhat too strong, reflected in consecutive downward revisions. This appears to be mainly for two reasons.

First, while external demand had been underestimated in 2017, NIESR, alongside most other professional forecasting institutions, missed the turning point in 2018 when global growth started weakening amidst the rise in trade tensions and the subsequent international manufacturing slowdown.

Second, NIESR's main-case forecast of the UK economy had been based on the assumption of a smooth Brexit within the initial timeline of a March 2019 exit set by Article 50. The rise in political uncertainty around the negotiation of the terms of EU exit was insufficiently captured by that scenario. Fan charts reflected alternative Brexit scenarios, including for the prospect of a no deal exit.

In summary, NIESR forecasts around the time of the EU referendum have broadly anticipated the outturns and were qualitatively accurate in predicting the direction and nature of the impact of Brexit. A lesson that can be drawn from quarterly forecast updates is that economic news, such as the vote to leave the European Union, may take some time to feed through the economy as businesses and consumers only gradually adjust their expectations. Furthermore, political and economic uncertainty may well persist longer than most observers currently anticipate, with an ongoing drag on economic growth,

Figure A2. UK inflation forecasts	Figure A3. Global GDP growth forecasts

Source: NIESR.
Notes: As figure A1.
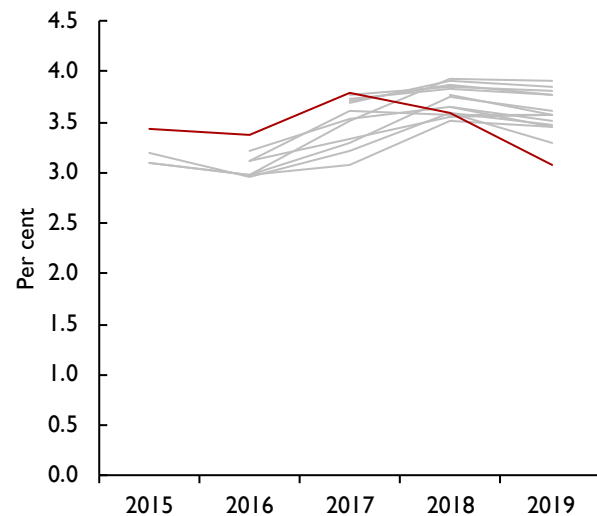
Source: NIESR.
Notes: As figure A1.

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Kara, A. and Lenoel, C. (2017), 'How has the UK economy performed since the EU referendum?', Box B, 'Prospects for the UK economy', *National Institute Economic Review*, 241, August.

Kirby, S., Carreras, O., Meaning, J., Piggott, R. and Warren, J. (2016), 'Prospects for the UK economy', *National Institute Economic Review*, 237, August.

Box B. Forecasting with a benchmark: the Warwick Business School forecasting system
### by Ana Galvão, Anthony Garratt and James Mitchell

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

To reflect the uncertainties inherent in economic forecasting, and following the practice of NIESR and other forecasters such as the Bank of England and OBR, the WBSFS provides probabilistic forecasts. The WBSFS forecasts are produced by explicitly combining density forecasts from a set of twenty four, statistically motivated, univariate and multivariate econometric models commonly used in the academic literature. The use of combination forecasts or model averaging reflects the view, supported by research (e.g., see Bates and Granger, 1969; Wallis, 2011; Geweke and Amisano, 2012; Rossi, 2013), that because any single model may be mis-specified there may be gains from the use of combination forecasts.

Comparison of the Institute's forecasts with the probabilistic forecasts from the WBSFS may be interpreted as providing an approximate indicator of the importance of expert judgement, which may include views on the underlying structure of the macroeconomy. This is because the WBSFS forecasts are computed by exploiting regularities in past data with the aid of automated time-series models; they do not take an explicit, structural or theoretical view about how the macroeconomy works; and they do not rely on (subjective) expert judgement to the same degree as those presented by the Institute. The forecasts from the WBSFS are not altered once produced; they are deemed 'simply' to represent the data's view of what will happen to the macroeconomy in the future.

Figure B1. WBSFS forecast probabilities for real GDP growth and inflation, year-on-year
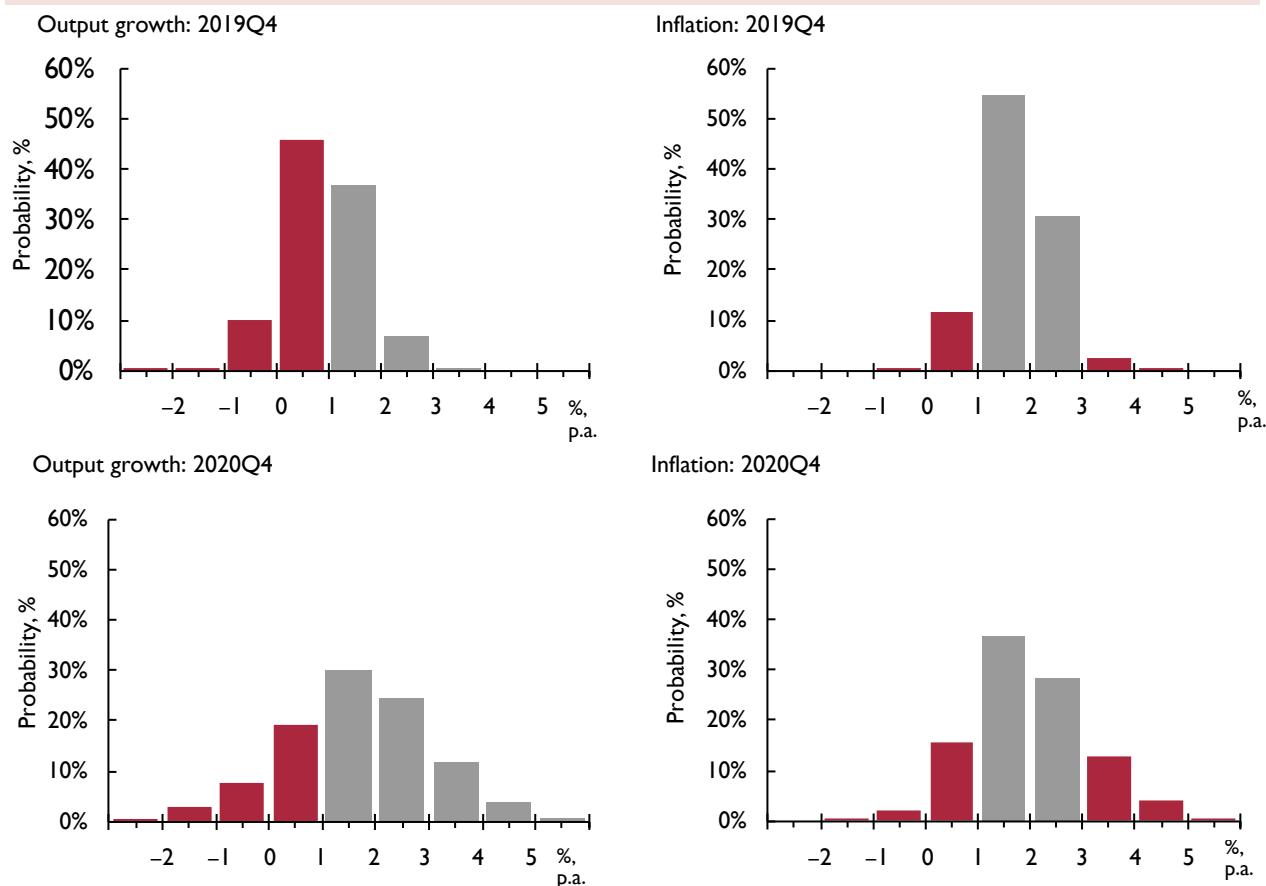
Note: To aid visualisation, output growth forecast outcomes greater than 1 per cent are coloured grey, red otherwise. For inflation, grey outcomes are defined as inflation within the Bank of England's target range of 1–3 per cent, such that the Governor does not have to write a letter of explanation to the Chancellor; forecast outcomes outside that are coloured red.

Box B. (continued)

Figure B1 presents WBSFS's latest (as of 11 October 2019) probabilistic forecasts for real GDP growth and inflation – defined as year-on-year growth rates for 2019Q4 and 2020Q4 – as histograms. The information set used to produce these forecasts includes information on GDP growth up to 2019Q2 and data on CPI inflation up to August 2019.

Table B1 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.

Table B1. Probability event forecasts for 2019Q4 and 2020Q4 annualised % real GDP growth and CPI inflation (extracted from the WBSFS forecast histograms)

Year	Real GDP growth (%, p.a.)			CPI inflation (%, p.a.)		
	Prob(growth<0%)	Prob(growth<1%)	Prob(growth<2%)	Prob(letter)	Prob(CPI<1%)	Prob(CPI>3%)
	Updated Forecasts (October 2019)					
2019Q4	10%	56%	93%	15%	12%	3%
2020Q4	11%	30%	60%	35%	18%	17%
	Previous Forecasts (July 2019)					
2019Q4	4%	20%	60%	32%	28%	4%
2020Q4	8%	24%	53%	41%	26%	15%

An examination of the output growth forecasts for 2019Q4, reported in table B1, suggests they were strongly affected by the 2019Q2 quarterly growth rate estimate of –0.2 per cent. Compared with our forecasts made one quarter ago, the risk of 'low' growth (growth less than 1 per cent) in 2019Q4 is considerably higher than last quarter: the predictive probability of this event has increased from 20 per cent to 56 per cent. The most likely range for output growth in 2019Q4 is 0 per cent to 1 per cent, with a 1 in 2 probability, a shift down from the 1 per cent to 2 per cent range predicted last quarter. Accordingly, the probability that growth in 2019Q4 exceeds 2 per cent declined from 40 per cent one quarter ago to just 7 per cent in the current quarter.

The change in the predicted probabilities is less pronounced when looking further ahead to 2020Q4. Whilst we forecast a lower chance, of 40 per cent, that growth exceeds 2 per cent, this represents a modest change compared to the probability forecast of 47 per cent made last quarter. The most likely output growth range remains in the 1 per cent to 2 per cent range, with a probability of 30 per cent.

We also observe sizeable changes in the inflation outlook when updating the information set from July to October. The probability of inflation falling outside the 1 per cent to 3 per cent range in 2019Q4 has decreased from 32 per cent in July to 15 per cent in October, although this partly reflects a reduction in uncertainty as the forecast horizon shortens. The probability of inflation being less than 1 per cent in 2019Q4 has decreased from 28 per cent last quarter to the current 12 per cent; whilst the probability of inflation exceeding 3 per cent is approximately the same as last quarter (3 per cent compared to 4 per cent). Looking further ahead to 2020Q4, the forecast uncertainties remain, with the probability of writing a letter at 35 per cent, reduced from 41 per cent forecast a quarter ago. This largely arises due to a lower probability of inflation being less than 1 per cent, 26 per cent in July compared to 18 per cent in October.

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

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Section 2. Main-case forecast in detail

The UK economy has been blighted by elevated levels of uncertainty since around the time of the EU referendum in 2016. Our main-case forecast scenario assumes that uncertainty will continue to hang over decision makers at least until the UK's future relationship with the EU is agreed. In setting out the short-term outlook we also highlight some of the effects that Brexit-related uncertainty has already had on the economy, noting especially the effects on investment, productivity and living standards.

Financial market and credit conditions

Financial market and credit conditions continue to be very supportive for UK businesses and households.

Foreign exchange

Sterling has been significantly affected by expectations of when and how the UK will leave the EU. In August the sterling effective exchange rate was 20 per cent lower than at its pre-referendum peak in November 2015. And the prospect of a no-deal Brexit has been a major driver of the exchange rate. Figure 6 illustrates the tight correlation between the probability of no deal by the end of 2019 and the inverted sterling-US dollar exchange rate. The perceived probability of a no-deal outcome rose throughout July, when the government of Mr Boris Johnson took office, and August before subsiding from early September as prospects for a deal

increased. Sterling appreciated sharply in mid-October in response to the Brexit deal negotiated with the EU, to a level slightly above that assumed in the main-case forecast (table A1).

Interest rates

The probability of a no-deal Brexit was also reflected in expectations of short-term interest rates, with markets anticipating a significant loosening of monetary conditions. Figure 7 illustrates that the reduction in Bank Rate assumed in our forecast brings it closer to market expectations in 2020. After 2020, our interest rate path rises more steeply.

Since our last forecast, long-term interest rates on UK government bonds have continued to fall. The reduction can be explained by a fall in the term premium component (figure 8), a trend also observed in other major economies (see World section). With policy rates remaining low for longer, we now forecast only a gradual increase in long-term interest rates over the forecast horizon (table A1).

Corporate credit

Despite elevated uncertainty in the global economy, investment-grade corporate bond spreads remain close

Figure 6. No-deal betting probability and sterling exchange rate (inverted)
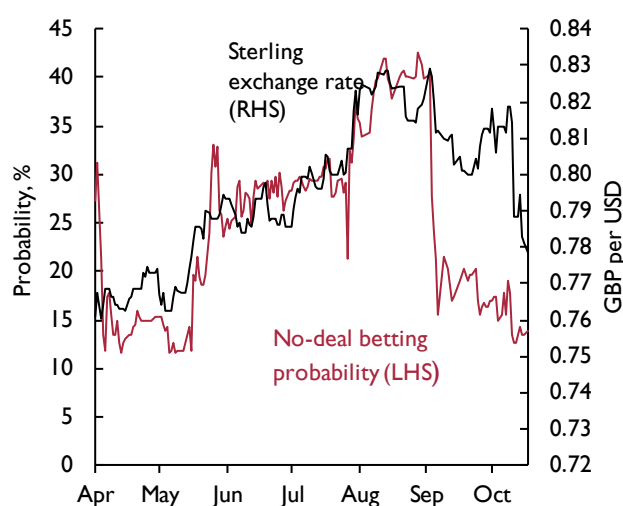
Source: Betfair, Datastream, NIESR.

Figure 7. Market implied paths for short-term interest rates and NIESR forecast
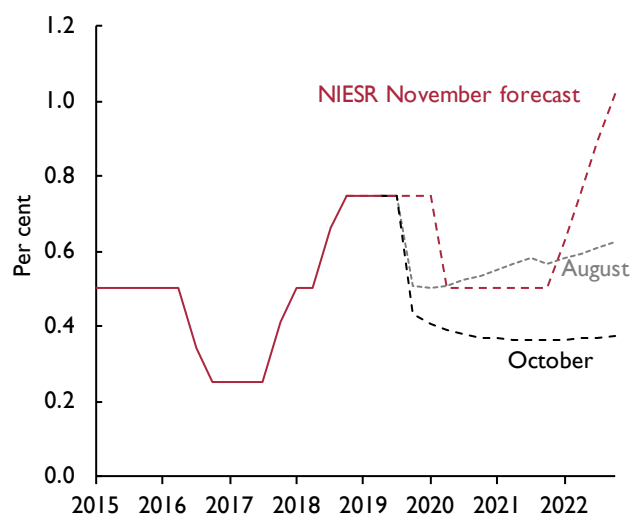
Source: Bank of England, NIESR forecast.
Note: The August and October 2019 curves are estimated using instantaneous forward OIS rates in the 15 working days to 16 August and 16 October respectively and are plotted from 3 months onwards.

Figure 8. Decomposition of 10-year bond yield
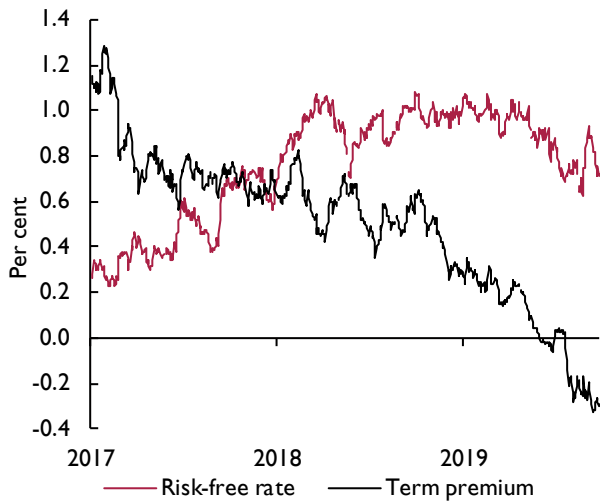
Source: NIESR term premium estimates, Bank of England.

Figure 9. BBB Corporate bond spread
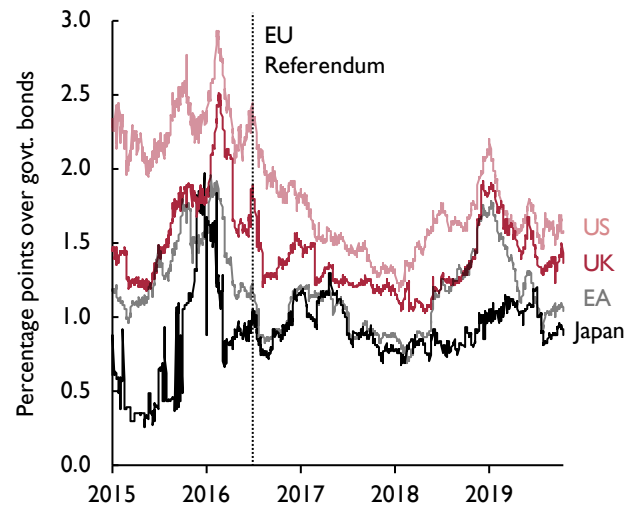
Source: NIESR, Datastream.

to their early 2018 levels when the world economy looked much stronger (figure 9). This, together with low long-term interest rates, means that businesses with access to the debt capital markets are facing benign financing conditions. Consistent with this, respondents to the 2019 Q3 *Deloitte CFO Survey* of large corporates reported that credit is cheap (net balance of 70 per cent) and available (net balance of 40 per cent). Indeed, the IMF has warned in its latest *Global Financial Stability Report* that benign financial conditions could have long-term costs and pointed to elevated vulnerabilities in the corporate and non-bank financial sectors in several large economies, including the United Kingdom. To the extent that high levels of corporate debt are an issue, it is likely to be where businesses, including private equity, have used financial engineering to lever up corporate balance sheets. There has been little evidence in recent years of excessive corporate investment in the real economy.

Credit conditions for smaller businesses appear more mixed. *UK Finance* reported in September that businesses had significant headroom in their lending agreements to meet cash-flow requirements. But the Bank of England Agents noted that conditions had tightened in certain sectors including the automotive and metal sectors, construction, retail and casual dining. In addition, the availability of trade credit insurance was reported to have tightened further in the retail and construction sectors.

There was some evidence of greater demand for credit among businesses, probably related to the need for

Figure 10. Sterling lending to PNFCs
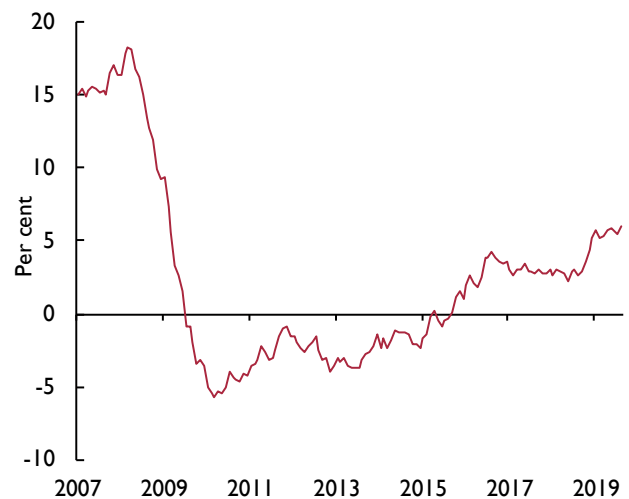
Source: Bank of England, NIESR.

working capital associated with inventory accumulation earlier in the year and other Brexit contingency planning. The *SME Finance Monitor* reported that 46 per cent of SMEs were using external finance in the first half of 2019, up from 36 per cent in 2018. Consistent with greater demand for bank credit, M4 lending to PNFCs was growing at a three-month annualised rate of 5.5 per cent in August, the fastest rate of growth since the financial crisis (figure 10).

Household finance

Financial and credit conditions facing households are also benign, though there are still material differences in the cost and availability of credit across different types of households. Interest rates are very low for savers and borrowers with significant housing equity, driven mainly by low spreads over Bank Rate, and spreads have come down for other borrowers (figure 11).

Despite relatively benign credit supply conditions, credit demand is fairly subdued. Growth in household borrowing remains slow at about 3.5 per cent per annum on the M4 lending definition. This mainly reflects continued slow growth in mortgage lending where mortgage approvals for house purchase have been steady at around 65,000 per month for around six years, though *UK Finance* figures indicated that the number of loans to first-time buyers in August reached its highest level since the financial crisis. The rate of growth of consumer credit has continued to decline, albeit to an annual rate of about 5 per cent per annum, due to a slowing in the growth of car dealership finance following a period of rapid growth.

Aggregate demand

Output and components of demand

There has been little dynamism in the UK economy since the EU referendum and the underlying pace of growth is slow. Robust evidence suggests that UK GDP was 2 per cent smaller in 2019Q1 than it would have been in a

Figure 11. Household borrowing interest rates (per cent)

Source: Bank of England, NIESR.

counterfactual where the EU referendum had not taken place.[3] Growth has been volatile over the year as activity waxed and waned around key Brexit dates. According to the latest ONS data and the NIESR GDP Tracker respectively, the economy contracted by 0.2 per cent in the second quarter, after an inventory-driven strong first quarter, and then expanded by about 0.5 per cent in the third, as the economy recovered. The nowcast of 0.5 per cent growth in the third quarter is driven by positive contributions from the service sector, where growth is buoyant in the motion picture, computer programming and professional services sectors, and the construction sector. In common with the pattern in other countries, manufacturing output is falling.

Survey evidence points to continued weakness in the private sector going into the fourth quarter. In the service sector, the headline business activity balance in the IHS Markit/CIPS UK services PMI survey dropped to 49.5 in September from 50.6 in August, well below the long-run average of 54.9. It was reported that the decline partly reflected a reduction in export demand and that some clients had switched business to other markets due to concerns about a possible no-deal Brexit. In the manufacturing sector, the IHS Markit/CIPS UK manufacturing PMI balance rose slightly to 48.3 in September from 47.4 in August, but was still consistent with output contraction. Manufacturers reported that production had been scaled back due to a fall in new orders from both domestic and foreign customers, with the investment sector weakest. There was also reported to be evidence of increased stockbuilding as companies restarted their Brexit preparations. The CBI reported that the outlook for manufacturing weakened considerably in September and that respondents expected output volumes to fall at a faster pace in the fourth quarter.

Taken together, the recent evidence and past trends point to growth of about 0.3 per cent in the fourth quarter. This would be consistent with growth of 1.4 per cent in 2019 as a whole, the same as in 2018.

Revisions to the national accounts have altered the demand-side explanation for recent growth. Private consumption growth is now estimated to have contributed 2 percentage points to GDP growth of 2.9 per cent between 2017Q1 and 2019Q2, rather than 2.5 percentage points as previously thought. This was offset by a stronger contribution from gross capital formation (0.4 rather than −0.6 percentage points) and government consumption (0.8 rather than 0.6 percentage points) and a smaller contribution from net trade (−1.1 rather than 0.5 percentage points). The contribution of the statistical
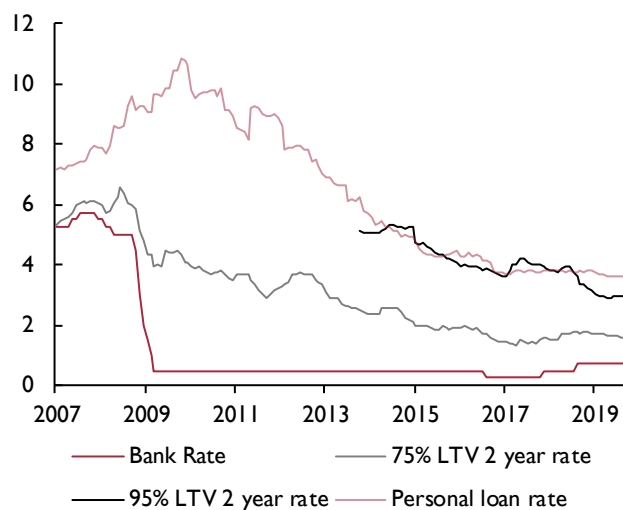
Figure 12. Contributions to GDP growth
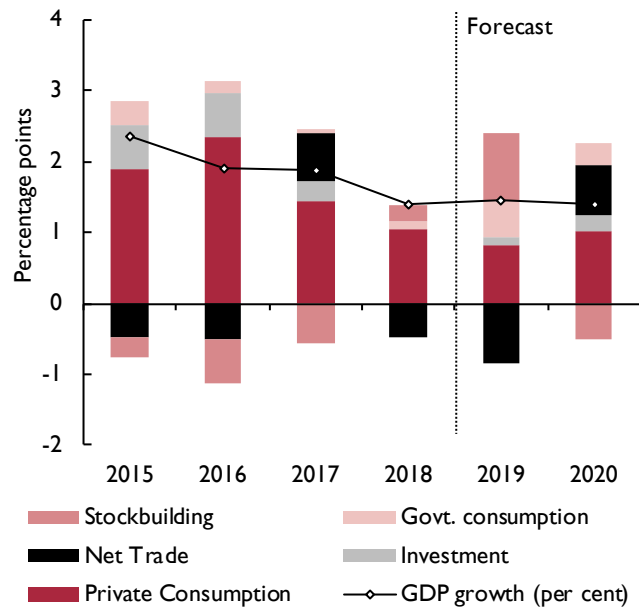
Source: NIESR.

discrepancy is also larger (0.8 rather than 0.0 percentage points).

Our main-case forecast scenario is for a continuation of growth of about 1½ per cent in 2020, supported by similar rates of growth in the main demand components. In 2019 and 2020, fluctuations in the contribution of stockbuilding are expected to be largely offset by changes in net trade as import growth first rises and then falls (figure 12 and table A3).

Household and NPISH sector

Household consumption growth has weakened considerably over the past three years. In the second quarter of 2019 year-on-year consumption growth was only 1.1 per cent, a much slower growth rate than at the end of 2016 when it was 4.7 per cent. The slowdown largely reflects slower growth in real disposable income following the EU referendum, but also a pick-up in saving. In the revised national accounts data, the household saving ratio fell from a post-financial crisis peak of 12.4 per cent at the beginning of 2010 to 5.3 per cent in 2017 before picking up to 6.1 per cent in 2018 and 6.8 per cent in the second quarter of 2019.

The weakness of household consumption growth has continued in the recent retail sales data, where the year-on-year growth rate in the quantity bought has slowed

from 6.7 per cent in March to 3.1 per cent in September, and in the housing market, where annual house price growth slowed from 2.7 per cent in August 2018 to 1.3 per cent in August this year.

The outlook for private consumption growth will depend primarily on how household incomes develop. In our main-case forecast scenario, household incomes continue to grow at an average annual rate of a little over 2 per cent, driven by real wage growth of around 1½ per cent per annum and employment growth of around ½ per cent per annum. This real income growth supports private consumption growth of around 1½ per cent per annum and a gradual increase in the household saving ratio from its current level of 6.8 per cent of household income to 7½ per cent in 2020 and 8 per cent in 2021.

Investment

Gross fixed capital formation (GFCF) has continued to be weak, particularly among businesses. While fixed investment was flat in 2018 as a whole, business investment fell by 1.6 per cent. This decline was offset by a 2.1 per cent increase in government investment and a 9.8 per cent increase in private sector dwellings investment. Business investment fell by a further 0.6 per cent in the second quarter of 2019.

Business investment

Investment data are prone to revision and ONS has warned that the latest business investment figures are less reliable than usual due to the impact of a new accountancy framework on reporting. Revisions in the latest national accounts have changed the picture of how business investment has behaved in recent years. The revised pattern of business investment is shown in figure 13.

On the new data, business investment is 40 per cent higher than at its post-financial crisis trough in 2009 Q4. It grew at an average annual rate of 3.2 per cent from the trough to 2016Q2, and was growing strongly when the EU referendum took place. It has since grown at an average annual rate of 0.1 per cent. The weakness of business investment since the referendum is almost certainly due to Brexit and the fear that trade with the EU will be sufficiently costly in the future that new investment will not pay off.

There are various ways to assess the extent to which business investment has been affected by Brexit-related uncertainty. One approach is to compare aggregate business investment with its determinants. Figure 14 plots the business investment to GDP ratio against

Figure 13. Business investment growth

Source: NIESR.

Figure 14. Business investment to GDP ratio and user cost of capital
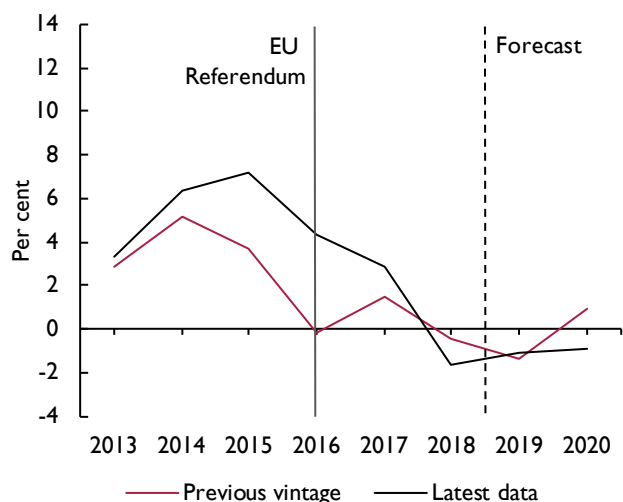
Source: NIESR.

NIESR estimates of the user cost of capital. The user cost combines financing and depreciation costs of investment and is estimated to be much lower now than it was prior to the financial crisis, reflecting lower real interest rates and lower dividend yields, though it is estimated to have picked up somewhat since the EU referendum, reflecting a higher equity risk premium that has offset the effect of lower real interest rates.

The chart highlights that the relationship between business investment and the user cost of capital appears to have shifted since the financial crisis. At least in the immediate aftermath of the financial crisis, this is likely to be because the measured user cost did not adequately pick up the effects of the crisis on borrowing constraints. But financial conditions for most investing businesses have been very benign for several years now, consistent with the upward trend in the business investment to output ratio up until the EU referendum in 2016. It is possible that, had it not been for the referendum and the uncertainty it created, the trend would have continued upwards so that the pre-crisis relationship reasserted itself. The user cost is now about 25 per cent lower than it was on average prior to the financial crisis. Other things equal, a 25 per cent lower user cost would be associated with a 12.5 per cent higher business investment to GDP ratio when the elasticity of substitution is around a half, the estimated elasticity in the UK.[4] That relationship would suggest that business investment ought to be about 12.5 per cent higher than its pre-crisis average or about 15 per
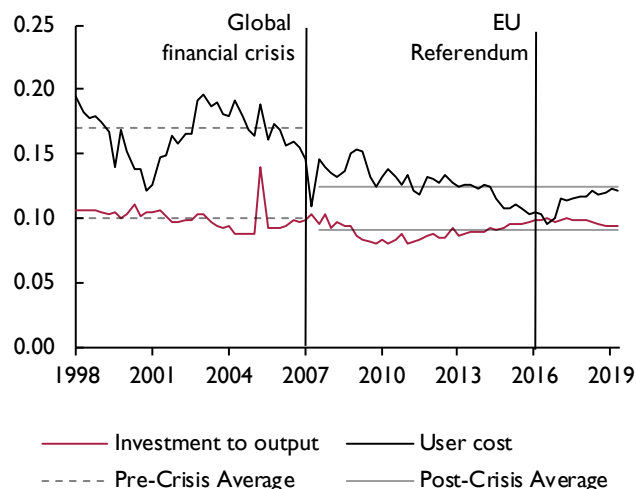
cent higher than it is now. As it turns out this is broadly consistent with estimates based on survey responses that the anticipation of Brexit has reduced investment by 11 per cent (Bloom *et al.*, 2019) and to previous recoveries from large recessions (Lenoel, 2019). Partly, this is driven by a reduction in foreign direct investment as both the number of new investment projects but also reinvestments have been falling since 2017 (Hantzsche and Nguyen, 2019).

Recent survey evidence suggests that there is unlikely to be a material increase in business investment until Brexit and political uncertainty is resolved. For example, a net balance of 73 per cent of CFOs expect UK corporates capital expenditure to decrease over the next twelve months according to the 2019Q3 Deloitte CFO Survey.

In our main-case forecast scenario, persistent uncertainty continues to drag on business investment which falls by around 1 per cent in 2019 and 2020.

Housing investment
There have also been significant revisions to the housing investment data and past growth is now estimated to be considerably lower than previously thought (figure 15).

In our main-case forecast scenario, housing investment growth recovers to around 4 per cent in 2020 and ensuing years consistent with growing household income.

Figure 15. Housing investment growth

Source: NIESR.

Figure 16. Net capital stock, revisions
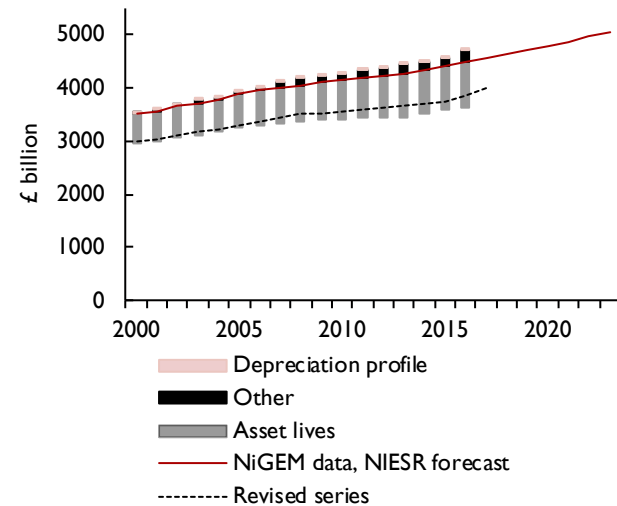
Source: ONS, NIESR.
Note: Total net capital stock in NiGEM is represented by the variable UKK.

External sector

Brexit-related uncertainty has had a significant effect on UK trade, particularly in view of the substantial fall in sterling that followed the EU referendum. This contributed to higher import and export prices (table A2) and a rise in UK export price competitiveness, but had relatively little effect on the terms of trade (table A4). Exports of goods and services grew strongly in 2017, but this did not last and both fell in 2018 as the global trading environment weakened.

Global trade remains fragile (see the World Economy chapter of this *Review*) and is where the outlook is most uncertain. In our main-case scenario, export growth picks up to 1 per cent in 2019 and 2020, after falling by 1 per cent in 2018 (table A4). Import growth is likely to be volatile as stockbuilding increases and then falls. Import growth reaches 4 per cent in 2019, before falling by 1½ per cent in 2020.

Supply conditions

Economic slack continues to be small which means that economic growth will need to come from an expansion of supply potential, determined by the availability of capital, labour and the efficiency with which they are used in production.

Capital stock

Estimates of the capital stock are notoriously unreliable, reflecting inherent difficulties in measurement. In its upcoming *Blue Book* publication, the ONS will make

revisions to the method with which capital stocks are estimated. Calculations provided by the ONS suggest that revisions will have significant implications for estimated capital levels, reducing the net capital stock by 12 per cent (£540 billion) for 2017 and increasing capital consumption by 23 per cent (£56 billion).[5] Figure 16 shows net capital stock revisions are almost entirely driven by methodological changes to how asset lives are estimated, better reflecting how long different assets are used before being replaced, resulting in shorter asset lives overall and thus implying faster depreciation. The ONS will also move from linear depreciation profiles to so-called hyperbolic age-efficiency profiles more accurately reflecting how quickly assets lose value which has a small positive impact on capital stocks, as do other minor changes related to revisions to net investment and deflators.

Despite weak business investment, we estimate that the economy's net capital stock will have grown by 1.7 per cent at the end of 2019, stronger than the post-2009 average growth rate of 1.3 per cent and in line with last year's growth rate of 1.8 per cent (table A6).

Labour market

While Brexit uncertainty has impacted capital investment in a negative way, it may have led to more labour demand since 2016 than otherwise. In the recent data, there is evidence that employment and wage growth in the economy as a whole are stabilising amidst global and domestic uncertainties.
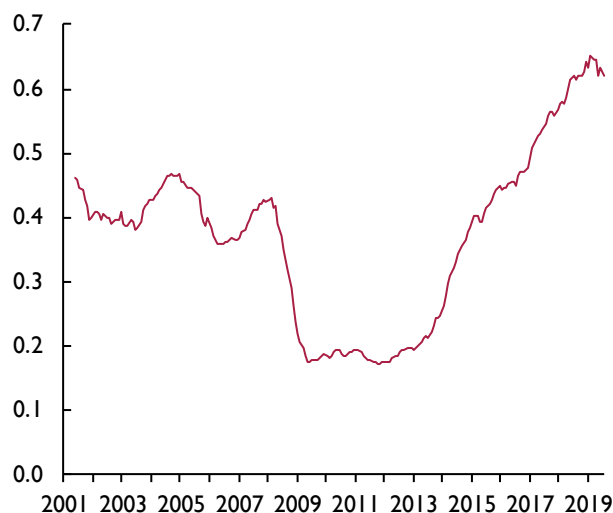
Source: ONS, NIESR.

Source: ONS.

Unemployment stabilised at 3.9 per cent of the labour force in the three months to August, only slightly lower than the 4 per cent it reached a year ago. The ONS estimate the employment rate at 75.9 per cent, higher than a year earlier when it reached 75.6 per cent but 0.2 percentage points lower than three months before. The ratio of vacancies relative to the number of people unemployed, a measure of labour market slack, has fallen gradually since it reached a peak at the beginning of the year (figure 17).

Aggregate labour market data somewhat conceal that some sectors, like professional services, operate near capacity and continue to face recruitment difficulties, while others, in particular manufacturing, see labour demand cooling rapidly as the result of a global and domestic weakening in growth momentum. Evidence discussed at NIESR's Business Conditions Forum in August suggests that employment dynamics in manufacturing reflect a global trend to do with trade uncertainty while weaker employment growth in services than in other countries is consistent with the amplification of Brexit uncertainty. According to IHS Markit/CIPS, staff levels have been reduced in manufacturing at the fastest pace in 6½ years in September and the service sector as a whole cut jobs for the first time in five months. The 2019Q3 Deloitte CFO Survey finds that 70 per cent of CFOs expect hiring to decrease in the next twelve months as the focus on cost reductions has become sharper. There is a strong negative correlation between expectations of reduced hiring and the perceived level of economic and financial uncertainty.
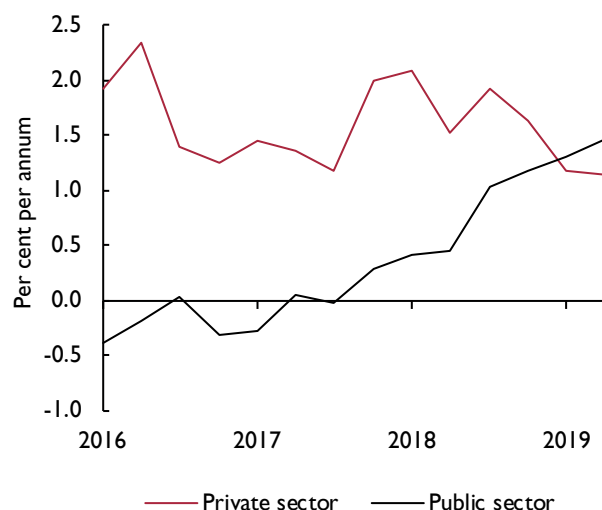
The weakness in private sector labour demand is increasingly being offset by the public sector whose hiring activity has accelerated since turning positive in 2018 and following eight years of staff level reductions (figure 18).

Net migration continues to add to labour supply. It has remained broadly stable since the end of 2016, adding 226,000 people to the UK population in the twelve months to March 2019. EU net migration has fallen since the 2016 EU referendum but it is still positive with the exception of people from Central and Eastern European countries for which the ONS records more leavers than arrivals. Non-EU net migration has stabilised in the year to March, after gradually increasing since 2013. Higher net migration adds to new population projections by the ONS but this is offset by lower fertility and lower life expectancy compared to previous long-term projections.

We forecast that employment growth will continue to weaken gradually, reaching 0.9 per cent in 2019 as a whole and 0.2 per cent in 2020 (table A7).

Productivity
Apart from Brexit, one of the main features of the UK economy has been the slow pace of productivity growth since the financial crisis that began in 2007. There is growing evidence that Brexit uncertainty has also had

an adverse impact on productivity growth which has weakened further over the past year. The ONS estimates that labour productivity, as measured by output per hour, fell by 0.5 per cent in the second quarter of this year, compared with the same quarter a year earlier. There was no growth in productivity as measured by output per job in 2019Q2.

Evidence provided by Bloom *et al.* (2019) suggests that Brexit-related uncertainty has contributed to this weakness over the past three years, decreasing productivity by 2–5 per cent compared to a counterfactual without Brexit uncertainty. This is explained by lower investment, a diversion of management time at firms towards Brexit planning and reductions in the size of relatively more productive firms. Figure 19 plots NIESR's current forecast for labour productivity against our forecast from May 2016 which was based on the assumption of a vote to remain in the EU. We now expect labour productivity to have grown by 2 per cent since 2015 compared to a forecast of 5 per cent before the referendum.

Looking ahead, our forecast is for productivity growth to rise to around 1 per cent per annum from 2020 onwards based on the assumption that Brexit-related uncertainty gradually fades (table A7).

Wages and prices
Despite low productivity growth, real wages are starting to pick up in response to a tight labour market and increases in public sector pay. Staff shortages have translated into higher starting salaries, which rose at a sharp and accelerated pace in September, according to the KPMG and REC *Report on Jobs*, after a slowdown in August. However, Incomes Data Research report that firms target pay increases more than in the past to retain staff rather than raising awards broadly and Bank of England Agents mention the increased use of non-wage benefits. Employment intentions remain slightly negative and consistent with a labour market facing labour shortages in some areas while others shed labour, expectations are for median pay settlements to remain unchanged in the near term.

Similar to employment growth, earnings growth has increasingly become supported by public sector pay. Figure 20 depicts its growing contribution to economy-wide regular earnings growth, which partly offset stabilising private sector earnings growth. Higher public spending is likely to allow for higher pay awards than in the recent past.

The NIESR Wage Tracker suggests that nominal earnings growth will stabilise at just below 4 per cent in the fourth quarter of this year. This is half a percentage point more than a year ago. We expect similar rates of earnings growth to prevail in 2020 (table A5).

Robust average weekly earnings growth together with subdued productivity growth imply that unit labour

Figure 19. Labour productivity compared to NIESR's pre-referendum forecast
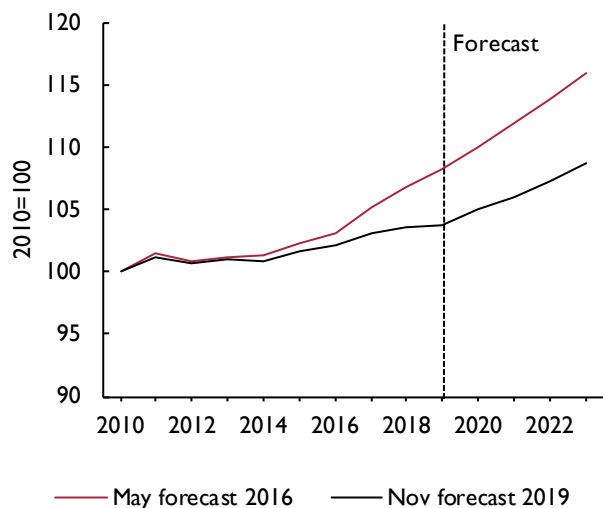
Source: NIESR.

Figure 20. Contributions to earnings growth
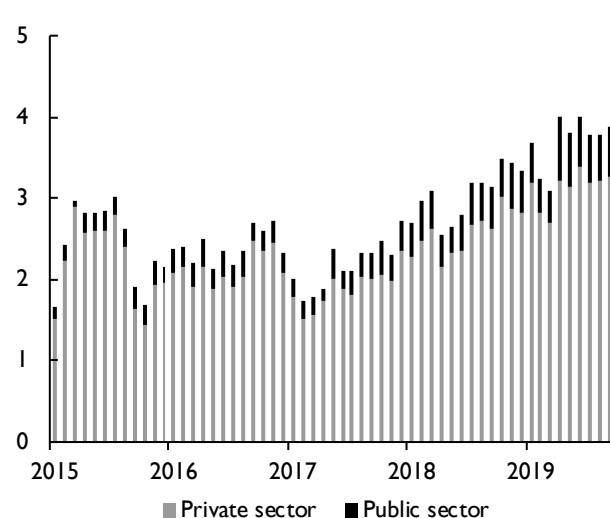
Source: ONS, NIESR estimates.

Figure 21. Estimates of annual unit labour cost growth

Source: ONS, NIESR estimates.

Figure 22. Public sector net borrowing, impact of revisions and NIESR forecast
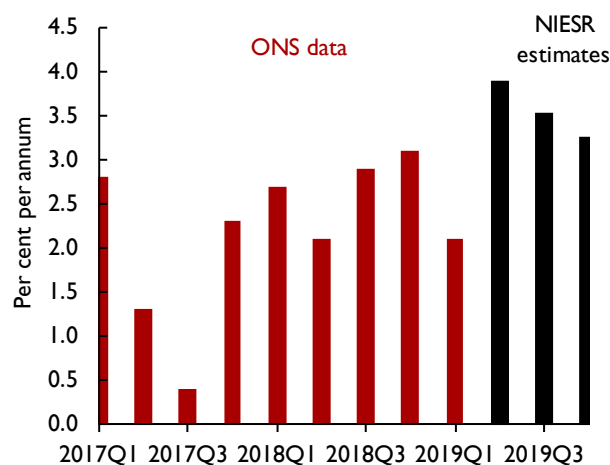
Source: ONS, NIESR.

cost growth remains elevated, reaching 3.5 per cent and 3.3 per cent in the third and fourth quarter of 2019, respectively, after having risen to a 10-year high of 3.9 per cent in the second quarter (figure 21). Unit labour cost growth is expected to ease somewhat thereafter as productivity growth gradually picks up.

The consumer price index (including and excluding owner occupiers' housing costs) increased by 1.7 per cent per annum in September, unchanged from August and weaker than the 2 per cent recorded throughout the second quarter of the year. NIESR's trimmed mean measure of underlying inflation, which excludes the highest and lowest 5 per cent of price changes, also remained stable at 1 per cent. This estimate is consistent with headline inflation of around 2 per cent in the next twelve months and suggests that higher unit labour cost growth is not adding substantially to price pressures. Our inflation forecasts are provided in table A2 with CPI inflation forecast to stay close to the Bank of England's 2 per cent target over the forecast horizon.

Public finances

After a number of years of falling public sector borrowing and fiscal probity, it is likely that public borrowing is about to increase driven by a rise in government spending and a weak economy. The rise in public spending announced in the September 2019 Spending Round, setting departmental budgets for 2020–21, is consistent with NIESR's recent forecasts of total managed expenditure that were above those implied by the government's announced fiscal plans. At the same

time, headline fiscal aggregates have been subject to significant data revisions, causing the net borrowing ratio to be higher relative to GDP and the net debt ratio to be lower.

Of the revisions most severely adding to public sector borrowing is the decision of the ONS to treat student loans differently in the national accounts. Loan outlays are no longer treated as conventional loans but instead a hybrid approach accounts for the fact that significant shares of student loan debt will never be repaid. Expected cancellations are now recorded as government expenditure upon loan issue. This adds an increasing amount to annual borrowing over the past twenty years, amounting to to £12.4 billion in the 2018–19 financial year, or 0.6 per cent of GDP (figure 22). The ONS has also adopted a new approach to account for public sector pensions, which adds another £1.3 billion to 2018–19 borrowing (0.1 per cent of GDP). Finally, nominal GDP was revised upwards, somewhat improving the deficit ratio. Figure 22 additionally shows borrowing data from NIESR's August database for comparison. Additional differences in the revised series are due to corrections made by the ONS to the treatment of corporate tax credits, which previously were erroneously recorded, now adding £2–4 billion a year to borrowing in the last four financial years.

Downward revisions to public sector net debt as a share of GDP are nearly equally due to GDP revisions and

Figure 23. Public sector net debt, impact of revisions and NIESR forecast
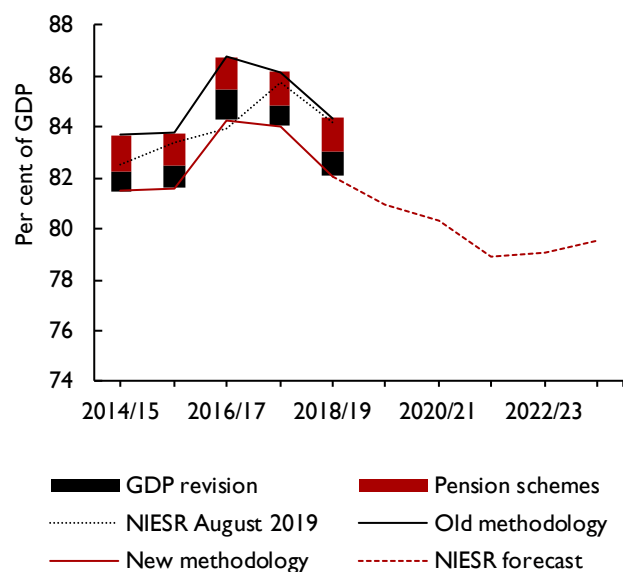
Source: ONS, NIESR.

the treatment of public sector pensions in public finance statistics, with the latter subtracting £28.6 from public sector net debt in 2018–19 (1.3 per cent of GDP) and lower nominal GDP reducing the net debt-to-GDP ratio by an additional percentage point (figure 23). The new student loan treatment is neutral in terms of public sector net debt, though not other measures of the balance sheet.

Applying the new methodology, public sector borrowing between April and September 2019 was £40.3 billion, £7.2 billion more than in the same period last year, half of which is accounted for by a higher current budget deficit and the other half due to capital spending. Net debt reached 80.3 per cent of GDP at the end of September, 1.2 percentage points of GDP less than a year earlier.

In August 2018, NIESR predicted that nominal government spending (total managed expenditure) would reach £878 billion in 2020–21, reflecting our analysis that spending would have to rise to accommodate demographic pressures and the rising need to maintain public service quality (Hantzsche and Young, 2018). In contrast, the OBR in March 2019 had forecast spending to be lower by £13 billion in that period (£865 billion), reflecting the previous government's plans at the time. The fast-tracked one-year Spending Round, that was concluded in September 2019, raised total managed expenditure for 2020–21 by £13.4 billion relative to the

OBR projection. Additional spending was allocated to health and social care, education and public safety, i.e. the areas identified by NIESR's fiscal analysis (*ibid.*) in need of the largest spending increases.

The spending outlook remains very uncertain. The government has signalled an increase in public investment relative to already announced spending, as well as lower taxes and national insurance contributions (see also Box C in Prospects for the UK Economy, August 2019). The Budget scheduled for 6 November has been cancelled. A no-deal Brexit would lead to lower tax revenue and require an increase in spending to respond to initial economic disruptions. There is also the possibility that a general election may in the near term bring about a new government with very different tax and spending priorities.

What appears to be clear is that of the current fiscal rules, the fiscal mandate, which requires the government to run a structural deficit of less than 2 per cent of GDP in 2020–21, will be broken. Achieving the broader fiscal objective of balancing the budget by the mid-2020s is no longer realistic. An overhaul of the fiscal framework is therefore necessary.

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. In the second quarter of 2019, the household sector was a net lender, while the corporate and government sectors were net borrowers. The aggregation of these three domestic sectors is the current account balance, which reached a deficit of 4.6 per cent of GDP in the second quarter of 2019, the amount of borrowing from the rest of the world that is required in order to fund domestic investment plans.

There have been substantial revisions to the sectoral balances as a result of methodological changes to the national accounts. These have mainly affected the distribution of balances among the domestic sectors rather than the current account balance.

Net lending of households as percentage of GDP was revised upwards by 1.8 percentage points in 2018, from –1.1 per cent to 0.7 per cent. This was largely due to revisions to self-employment income – an £18.3 billion upward revision to mixed income – and to estimated charitable giving – a £16.5 billion upward revision to net miscellaneous current transfers received and paid

for by households. In addition, the new treatment of student loans in the national accounts added £10 billion to household net lending in 2018 reflecting higher capital transfers received by households to reflect loans that are expected to be written off. There have been corresponding upward revisions to government sector borrowing. For 2018 there was an upward revision in central government net borrowing of £13.6 billion from £26.3 to £39.9 billion.

Government sector saving is expected to fall from a recent peak of 1½ per cent of GDP in 2018 to around ½ per cent of GDP in the medium term as austerity is eased. With government investment running at around 2½ per cent of GDP we expect the government to remain in a net borrowing position of around 2 per cent of GDP beyond 2020.

The current account deficit is forecast to fall from around 4 per cent of GDP in 2019 towards 2 per cent of GDP by 2023, reflecting higher saving in the household sector. The deficit is currently high compared with most other G7 economies or the Euro Area and is a reflection of lower saving in the UK than elsewhere. The net international investment position is estimated to be in deficit by £300 billion in the second quarter of 2019 (around 15 per cent of GDP).

NOTES

1   Details on the withdrawal agreement and political declaration are available at: https://www.gov.uk/government/publications/new-withdrawal-agreement-and-political-declaration.
2   https://www.niesr.ac.uk/publications/summary-niesr-business-conditions-forum-august-2019-%E2%80%93-labour-market-turning.
3   '£350 million a week: The output cost of the Brexit vote', by Benjamin Born, Gernot Müller, Moritz Schularick, Petr Sedláček, VOX CEPR Policy Portal, May 2019.
4   See for example Barrell, Ray and Riley, Rebecca (2006), 'Is UK business investment unusually weak?', *National Institute Economic Review*, 196, April, pp. 60–62.
5   See Office for National Statistics (2019). Latest developments and changes to capital stocks to be implemented in Blue Book 2019, National Accounts articles.

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Appendix – Details of main-case forecast scenario

Table A1. Exchange rates and interest rates

	UK exchange rates			FTSE All–share index	Interest rates			
	Effective 2011 = 100	Dollar	Euro		3–month rates	10–year gilts	World(a)	Bank Rate(b)
2014	110.2	1.65	1.24	3137	0.50	2.50	0.90	0.50
2015	116.4	1.53	1.38	3150	0.60	1.80	0.90	0.50
2016	104.8	1.35	1.22	3102	0.50	1.30	0.90	0.25
2017	99.2	1.29	1.14	3542	0.40	1.20	1.30	0.41
2018	101.3	1.34	1.13	3552	0.70	1.40	2.00	0.75
2019	100.1	1.27	1.13	3514	0.80	0.80	2.20	0.75
2020	99.6	1.25	1.13	3459	0.70	0.80	1.70	0.50
2021	100.0	1.26	1.12	3396	0.70	1.20	1.70	0.50
2022	100.3	1.28	1.12	3378	1.00	1.60	1.80	1.02
2023	100.5	1.29	1.11	3413	1.30	1.90	1.90	1.19
2024	100.6	1.31	1.10	3482	1.50	2.20	2.00	1.40
2019 Q1	101.9	1.30	1.15	3397	0.90	1.20	2.40	0.75
2019 Q2	101.3	1.29	1.14	3533	0.80	1.00	2.40	0.75
2019 Q3	97.7	1.23	1.11	3603	0.80	0.60	2.20	0.75
2019 Q4	99.4	1.24	1.13	3524	0.80	0.50	1.80	0.75
2020 Q1	99.6	1.24	1.13	3497	0.90	0.60	1.80	0.50
2020 Q2	99.6	1.24	1.13	3467	0.70	0.70	1.70	0.50
2020 Q3	99.6	1.25	1.13	3447	0.70	0.90	1.70	0.50
2020 Q4	99.7	1.25	1.13	3426	0.70	1.00	1.70	0.50
2021 Q1	99.8	1.26	1.13	3408	0.70	1.10	1.70	0.50
2021 Q2	99.9	1.26	1.12	3400	0.70	1.20	1.70	0.50
2021 Q3	100.0	1.26	1.12	3391	0.70	1.30	1.70	0.50
2021 Q4	100.1	1.27	1.12	3385	0.70	1.40	1.70	0.50
Percentage changes								
2014/2013	7.4	5.3	5.4	4.3				
2015/2014	5.6	–7.2	11.1	0.4				
2016/2015	–10.0	–11.4	–11.2	–1.5				
2017/2016	–5.3	–4.9	–6.7	14.2				
2018/2017	2.1	3.6	–1.0	0.3				
2019/2018	–1.2	–5.2	0.1	–1.1				
2020/2019	–0.5	–1.5	–0.2	–1.6				
2021/2020	0.3	1.2	–0.5	–1.8				
2022/2021	0.4	1.2	–0.6	–0.5				
2023/2022	0.1	1.2	–0.9	1.0				
2024/2023	0.1	1.2	–1.0	2.0				
2019Q4/18Q1	–1.0	–3.4	0.2	4.8				
2020Q4/19Q1	0.3	0.8	–0.2	–2.8				
2021Q4/20Q1	0.4	1.2	–0.5	–1.2				

Notes: We assume that bilateral exchange rates for the fourth quarter of this year are the average of information available to 14 October 2019. We then assume that bilateral rates remain constant for the following two quarters before moving in line with the path implied by the backward–looking uncovered interest rate parity condition based on interest rate differentials relative to the US. (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 ($)(a)	Consump–tion deflator	GDP deflator (market prices)	RPI(b)	Consumer prices CPI(c) CPIH(d)

	Unit labour costs	Imports deflator	Exports deflator	World oil price ($)(a)	Consump–tion deflator	GDP deflator (market prices)	RPI(b)	CPI(c)	CPIH(d)
2014	97.5	103.0	99.7	98.4	98.6	97.3	97.3	99.3	98.7
2015	97.9	97.1	95.9	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	105.5	104.6	54.0	101.4	101.9	103.6	102.7	102.6
2018	105.3	108.6	108.3	70.4	104.0	103.8	107.0	105.2	104.9
2019	108.3	109.7	112.0	62.4	105.6	106.2	109.9	107.2	106.9
2020	111.3	112.2	114.0	56.2	107.9	108.9	112.8	109.4	109.1
2021	114.1	113.5	115.5	61.1	110.1	111.5	116.3	111.6	111.3
2022	116.8	115.1	117.1	62.4	112.2	113.9	120.3	113.7	113.4
2023	119.2	117.1	118.8	63.6	114.4	116.2	124.1	116.0	115.6
2024	121.5	119.4	120.6	64.9	116.7	118.6	127.6	118.3	117.9
Percentage changes									
2014/2013	0.1	–3.9	–1.6	–8.7	1.5	1.8	2.4	1.4	1.5
2015/2014	0.4	–5.7	–3.8	–47.0	0.0	0.6	1.0	0.1	0.4
2016/2015	2.2	3.0	4.3	–17.7	1.4	2.1	1.7	0.7	1.0
2017/2016	2.3	5.5	4.6	25.8	1.4	1.9	3.6	2.7	2.6
2018/2017	2.9	2.9	3.6	30.5	2.5	1.9	3.3	2.4	2.3
2019/2018	2.8	1.1	3.4	–11.4	1.6	2.3	2.7	1.9	1.9
2020/2019	2.8	2.2	1.8	–10.0	2.2	2.5	2.7	2.0	2.1
2021/2020	2.6	1.2	1.4	8.8	2.0	2.4	3.0	2.0	2.0
2022/2021	2.3	1.4	1.3	2.0	2.0	2.2	3.4	1.9	1.9
2023/2022	2.1	1.8	1.5	2.0	2.0	2.1	3.2	2.0	2.0
2024/2023	1.9	1.9	1.6	2.0	2.0	2.0	2.8	2.0	2.0
2019Q4/2018Q4	2.5	1.9	3.4	–15.7	1.9	2.8	2.7	1.8	1.9
2020Q4/2019Q4	2.7	1.2	1.3	6.1	2.1	2.5	2.6	2.0	2.1
2021Q4/2020Q4	2.5	1.0	1.2	2.0	1.9	2.3	3.0	1.9	1.9

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(c)	Total final expenditure	Total imports(c)	Net trade	GDP at market prices(d)
	Households & NPISH(a)	General govt.	Gross fixed investment	Changes in inventories(b)						
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	385	349	−3	2080	597	2677	625	−28	2061
2019	1366	396	351	16	2129	602	2731	648	−46	2091
2020	1387	403	356	6	2151	609	2760	640	−31	2120
2021	1407	410	363	6	2186	621	2807	655	−34	2152
2022	1427	416	372	6	2221	641	2862	675	−34	2187
2023	1448	423	381	6	2258	664	2922	697	−33	2225
2024	1472	429	389	6	2296	685	2981	717	−32	2264
Percentage changes										
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	0.6	−0.1		1.4	−0.9	0.9	0.7		1.4
2019/2018	1.3	2.8	0.6		2.4	0.9	2.0	3.6		1.4
2020/2019	1.6	1.7	1.3		1.0	1.1	1.1	−1.2		1.4
2021/2020	1.5	1.8	2.1		1.6	1.9	1.7	2.3		1.5
2022/2021	1.4	1.6	2.4		1.6	3.3	2.0	3.1		1.6
2023/2022	1.5	1.6	2.5		1.7	3.5	2.1	3.2		1.7
2024/2023	1.6	1.6	2.0		1.7	3.2	2.0	2.9		1.8
Decomposition of growth in GDP										
2015	1.9	0.3	0.6	−0.3	2.9	1.1	3.9	−1.6	−0.5	2.4
2016	2.3	0.2	0.6	−0.6	2.4	0.6	3.2	−1.1	−0.5	1.9
2017	1.4	0.0	0.3	−0.6	1.2	2.0	2.9	−1.4	0.7	1.9
2018	1.0	0.1	0.0	0.2	1.4	−0.3	1.1	−0.2	−0.5	1.4
2019	0.8	0.5	0.1	0.9	2.4	0.2	2.6	−1.1	−0.9	1.4
2020	1.0	0.3	0.2	−0.5	1.1	0.3	1.4	0.4	0.7	1.4
2021	0.9	0.3	0.3	0.0	1.6	0.5	2.2	−0.7	−0.1	1.5
2022	0.9	0.3	0.4	0.0	1.6	1.0	2.6	−1.0	0.0	1.6
2023	1.0	0.3	0.4	0.0	1.7	1.0	2.7	−1.0	0.0	1.7
2024	1.0	0.3	0.4	0.0	1.7	1.0	2.7	−0.9	0.1	1.8

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

Table A4. External sector

	Exports of goods[a]	Imports of goods[a]	Net trade in goods[a]	Exports of services	Imports of services	Net trade in services[c]	Export price competitive-ness[c]	World trade[d]	Terms of trade[e]	Current balance
	£ billion, 2016 prices[b]						2016=100			% of GDP
2014	286	397	−111	247	148	99	105.8	91.3	96.8	−4.7
2015	301	413	−112	251	162	90	105.6	96.5	98.8	−4.9
2016	298	432	−134	270	168	102	100.0	100.0	100.0	−5.2
2017	317	445	−128	285	176	109	96.5	105.0	99.1	−3.5
2018	312	443	−131	285	182	103	100.3	108.8	99.8	−4.3
2019	322	462	−141	280	186	95	100.3	112.5	102.0	−3.9
2020	334	462	−129	275	178	98	99.1	115.3	101.6	−2.8
2021	345	480	−136	276	175	101	98.6	119.3	101.8	−2.6
2022	359	500	−142	283	175	108	98.4	123.6	101.7	−2.5
2023	373	520	−147	291	177	114	98.2	128.1	101.4	−2.3
2024	385	537	−152	300	180	120	98.1	132.7	101.1	−2.0
Percentage changes										
2014/2013	1.1	2.9		1.0	5.8		4.7	4.7	2.4	
2015/2014	5.4	4.1		1.8	9.1		−0.2	5.6	2.1	
2016/2015	−1.2	4.6		7.3	3.8		−5.3	3.7	1.3	
2017/2016	6.3	2.9		5.9	5.1		−3.5	5.0	−0.9	
2018/2017	−1.5	−0.3		−0.1	3.3		4.0	3.7	0.6	
2019/2018	3.1	4.3		−1.6	2.0		0.0	3.3	2.3	
2020/2019	3.8	0.0		−1.9	−4.3		−1.2	2.5	−0.4	
2021/2020	3.2	3.8		0.4	−1.6		−0.5	3.5	0.2	
2022/2021	4.1	4.2		2.4	0.2		−0.2	3.6	−0.1	
2023/2022	3.9	3.9		3.0	1.1		−0.1	3.7	−0.3	
2024/2023	3.4	3.3		3.0	1.6		−0.1	3.5	−0.4	

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

Table A5. Household sector

	Average[a] earnings	Compen–sation of employees	Total personal income	Gross disposable income	Real disposable income[b]	Final consumption expenditure	Saving ratio[c]	House prices[d]	Net worth to income ratio[e]
	2016=100	£ billion, current prices			£ billion, 2016 prices		per cent		
2014	96.0	905	1591	1256	1273	1217	9.4	97.1	6.7
2015	97.0	929	1674	1323	1341	1253	9.9	102.9	6.7
2016	100.0	968	1715	1346	1346	1299	7.2	110.1	7.3
2017	103.0	1009	1772	1383	1363	1328	5.3	115.1	7.3
2018	106.0	1053	1856	1453	1397	1349	6.1	118.8	7.1
2019	110.0	1098	1935	1508	1427	1366	6.7	120.3	7.3
2020	114.0	1144	2018	1574	1459	1387	7.3	124.5	7.2
2021	118.0	1191	2105	1642	1492	1407	8.1	127.7	7.0
2022	122.0	1239	2193	1711	1525	1427	8.8	129.0	6.8
2023	126.0	1286	2285	1783	1558	1448	9.4	129.5	6.6
2024	131.0	1334	2381	1858	1592	1472	9.9	129.9	6.5
Percentage changes									
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	2.7	4.3	4.8	5.1	2.5	1.6		3.2	
2019/2018	3.7	4.3	4.2	3.8	2.1	1.3		1.3	
2020/2019	3.8	4.2	4.3	4.4	2.2	1.6		3.4	
2021/2020	3.5	4.1	4.3	4.3	2.3	1.5		2.6	
2022/2021	3.5	4.0	4.2	4.2	2.2	1.4		1.0	
2023/2022	3.5	3.8	4.2	4.2	2.2	1.5		0.4	
2024/2023	3.4	3.7	4.2	4.2	2.2	1.6		0.3	

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

Table A6. Fixed investment and capital

£ billion, 2016 prices

	Gross fixed investment				User cost of capital (%)	Corporate profit share of GDP (%)	Capital stock	
	Business investment	Private housing(a)	General government	Total			Private	Public(b)
2014	181	72	61	314	12.1	25.6	3291	1072
2015	187	76	61	324	10.9	24.9	3348	1104
2016	187	83	61	331	10.6	25.0	3402	1115
2017	190	90	63	343	11.5	24.9	3504	1065
2018	189	95	60	344	11.9	24.2	3552	1095
2019	186	95	64	345	11.7	23.4	3595	1129
2020	188	99	65	352	11.5	23.4	3641	1163
2021	192	103	66	361	11.7	24.0	3692	1199
2022	196	107	67	370	11.9	24.3	3748	1236
2023	201	110	68	379	12.0	24.6	3808	1275
Percentage changes								
2013/2012	2.9	12.2	−3.8	3.4			0.8	1.1
2014/2013	5.2	10.0	9.7	7.2			1.4	5.1
2015/2014	3.7	6.0	−0.8	3.4			1.7	3.1
2016/2015	−0.2	9.4	1.0	2.3			1.6	1.0
2017/2016	1.5	8.2	2.9	3.5			3.0	−4.5
2018/2017	−0.4	5.0	−5.0	0.2			1.4	2.7
2019/2018	−1.4	0.7	6.3	0.5			1.2	3.1
2020/2019	0.9	3.9	1.7	1.9			1.3	3.0
2021/2020	2.1	4.1	1.5	2.5			1.4	3.1
2022/2021	2.1	3.7	1.4	2.5			1.5	3.1
2023/2022	2.3	3.3	1.5	2.4			1.6	3.2

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*
	Employment		ILO		Population	Productivity	ILO
	Employees	Total(a)	unemploy– ment	Labour force(b)	of working age(c)	(2016=100) Per hour	unemployment rate %
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	27645	32724	1331	34055	41340	101.7	3.9
2020	27756	32803	1369	34173	41430	103.1	4.0
2021	27909	32987	1347	34334	41518	104.1	3.9
2022	28043	33147	1340	34487	41590	105.3	3.9
2023	28147	33273	1366	34638	41656	106.7	3.9
2024	28220	33367	1427	34793	41722	108.3	4.1
Percentage changes							
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	0.5	0.9	−3.5	0.7	0.2	0.3	
2020/2019	0.4	0.2	2.9	0.3	0.2	1.4	
2021/2020	0.6	0.6	−1.6	0.5	0.2	0.9	
2022/2021	0.5	0.5	−0.5	0.4	0.2	1.2	
2023/2022	0.4	0.4	1.9	0.4	0.2	1.3	
2024/2023	0.3	0.3	4.5	0.4	0.2	1.5	

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*

		2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24
Current receipts:	Taxes on income	445.8	472.1	490.8	510.7	531.8	553.8	577.0	601.4
	Taxes on expenditure	266.3	276.1	284.3	294.7	304.9	315.2	326.3	338.3
	Other current receipts	65.0	61.8	58.2	60.5	62.8	65.3	67.8	70.4
	Total	777.0	810.1	833.2	865.9	899.5	934.3	971.1	1010.1
	(as a % of GDP)	37.3	37.5	37.2	37.2	37.2	37.2	37.2	37.3
Current expenditure:	Goods and services	388.0	399.9	424.1	442.8	462.9	483.2	504.5	527.1
	Net social benefits paid	236.8	242.4	253.3	266.0	276.9	288.6	301.4	315.2
	Debt interest	62.1	56.1	59.6	58.2	58.7	59.4	60.8	62.8
	Other current expenditure	54.1	58.8	62.8	66.8	69.1	71.5	73.9	76.4
	Total	740.9	757.2	799.8	833.9	867.7	902.6	940.5	981.6
	(as a % of GDP)	35.5	35.1	35.7	35.8	35.8	35.9	36.0	36.2
Depreciation		49.0	48.8	50.3	52.1	53.9	55.9	58.1	60.3
Surplus on public sector current budget[a]		−12.8	4.1	−16.9	−20.0	−22.1	−24.3	−27.5	−31.8
(as a % of GDP)		−0.6	0.2	−0.8	−0.9	−0.9	−1.0	−1.1	−1.2
Gross investment		91.7	93.9	97.1	101.1	104.9	106.6	107.2	109.9
Net investment		42.7	45.2	46.8	49.0	51.0	50.7	49.1	49.7
(as a % of GDP)		2.0	2.1	2.1	2.1	2.1	2.0	1.9	1.8
Total managed expenditure		832.5	851.1	896.9	935.0	972.6	1009.2	1047.7	1091.6
(as a % of GDP)		39.9	39.4	40.0	40.1	40.2	40.1	40.1	40.3
Public sector net borrowing		55.5	41.0	63.7	69.0	73.0	74.9	76.6	81.5
(as a % of GDP)		2.7	1.9	2.8	3.0	3.0	3.0	2.9	3.0
Public sector net debt (% of GDP)[b]		82.7	81.0	80.6	79.5	78.6	79.6	79.6	79.6
GDP deflator at market prices (2016=100)		102.3	104.3	106.9	109.5	112.1	114.5	116.8	119.2
Money GDP		2086.0	2160.4	2241.2	2330.7	2421.2	2514.4	2610.7	2711.5
Financial balance under Maastricht[c]		−2.4	−2.3	−2.7	−2.9	−3.0	−3.0	−3.0	−3.0
Gross debt under Maastricht[c]		85.6	85.2	84.5	84.1	83.8	83.6	83.3	83.1

Notes: These data are constructed from seasonally adjusted national accounts data. This results in differences between the figures here and unadjusted fiscal year data. Data exclude the impact of financial sector interventions, but include flows from the Asset Purchase Facility of the Bank of England. (a) Public sector current budget surplus is total current receipts less total current expenditure and depreciation. (b) Data for Q2. Seasonal adjustment applied in NiGEM results in differences between the figures here and official unadjusted PSF data. (c) Calendar year.

Table A9. Saving and investment   *As a percentage of GDP*

| | Households | | Companies | | General government | | Whole economy | | Finance from abroad(a) | | Net |
	Saving	Invest–ment	Saving	Invest–ment	Saving	Invest–ment	Saving	Invest–ment	Total	Net factor income	national saving
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	4.2	4.2	7.4	10.5	1.3	2.6	13.0	17.3	4.3	1.3	−1.6
2019	4.7	4.2	8.6	11.2	1.1	2.7	14.3	18.2	3.9	0.7	−0.1
2020	5.1	4.3	9.2	10.6	0.6	2.8	14.9	17.7	2.8	0.6	0.5
2021	5.7	4.4	9.0	10.5	0.5	2.8	15.2	17.7	2.6	0.3	0.8
2022	6.2	4.5	8.7	10.5	0.5	2.8	15.4	17.8	2.5	0.2	0.9
2023	6.6	4.6	8.5	10.6	0.5	2.8	15.7	17.9	2.3	0.0	1.3
2024	7.0	4.7	8.5	10.6	0.5	2.8	16.0	18.0	2.0	−0.3	1.6

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

Table A10. Medium and long–term projections   *All figures percentage change unless otherwise stated*

	2018	2019	2020	2021	2022	2023	2024	2025–29
GDP (market prices)	1.4	1.4	1.4	1.5	1.6	1.7	1.8	1.5
Average earnings	2.7	3.7	3.8	3.5	3.5	3.5	3.4	3.1
GDP deflator (market prices)	1.9	2.3	2.5	2.4	2.2	2.1	2.0	2.1
Consumer Prices Index	2.4	1.9	2.0	2.0	1.9	2.0	2.0	1.9
Per capita GDP	0.8	0.8	0.8	0.9	1.1	1.2	1.3	1.0
Whole economy productivity(a)	0.5	0.3	1.4	0.9	1.2	1.3	1.5	1.4
Labour input	0.8	1.3	0.1	0.6	0.5	0.4	0.3	0.1
ILO Unemployment rate (%)	4.1	3.9	4.0	3.9	3.9	3.9	4.1	4.9
Current account (% of GDP)	−4.3	−3.9	−2.8	−2.6	−2.5	−2.3	−2.0	−1.0
Total managed expenditure (% of GDP)	39.4	39.8	40.1	40.2	40.2	40.1	40.2	41.1
Public sector net borrowing (% GDP)	2.2	2.4	2.9	3.0	3.0	2.9	3.0	2.8
Public sector net debt (% GDP)	82.5	81.0	80.5	79.3	78.7	79.6	79.6	79.8
Effective exchange rate (2011=100)	101.3	100.1	99.6	100.0	100.3	100.5	100.6	100.8
Bank Rate (%)	0.6	0.8	0.6	0.5	0.8	1.1	1.3	2.0
3 month interest rates (%)	0.7	0.8	0.7	0.7	1.0	1.3	1.5	2.1
10 year interest rates (%)	1.4	0.8	0.8	1.2	1.6	1.9	2.2	2.9

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