PROSPECTS FOR THE UK ECONOMY

*Amit Kara, with Arno Hantzsche, Jason Lennard, Cyrille Lenoel, Marta Lopresto, Rebecca Piggott, Craig Thamotheram and Garry Young**

Introduction

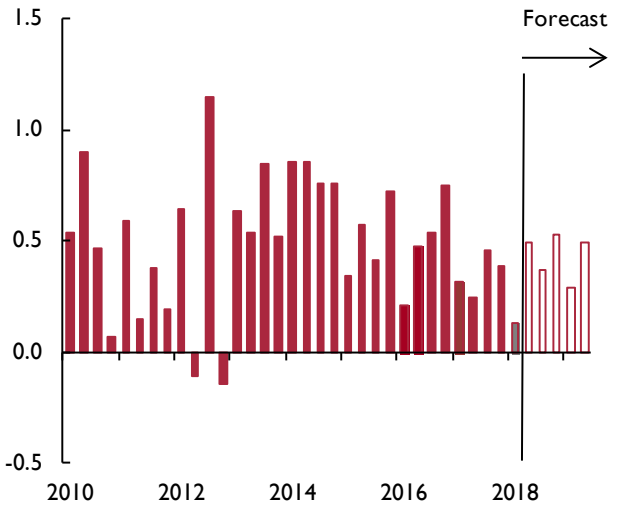
UK economic growth has weakened since the EU referendum in June 2016, in contrast to a pick-up in global growth. UK economic prospects hinge on the future relationship with the EU and, as before, our forecast assumes a soft Brexit where the UK maintains a high level of market access to the EU. Under that scenario, GDP is set to rise by 1.4 per cent this year and 1.7 per cent next year (figure 1). Our GDP growth forecast for 2018 has been revised down from 1.9 per cent partly because of the disruption caused by adverse weather conditions in the UK in late February and early March, which resulted in a sharp slowdown in first-quarter real GDP growth to just 0.1 per cent according to preliminary official data. The outturn was broadly in line with our monthly GDP estimate for Q1, published on 11 April, of 0.2 per cent.

Since our previous forecast in February, the UK government and the EU have made further progress by agreeing to a draft legal text of the Phase 1 agreement and alongside that a 21-month transition period after the UK exits the EU in March 2019 (see Box A). During this period the UK will have to comply with regulations of the single market and customs union, including free movement of labour, and also to maintain the budgetary contributions, but the UK is free to negotiate new trade deals. The agreement also includes a provision that helps prevent a hard border between the Republic of Ireland and Northern Ireland.

Although these developments represent a significant step forward, it is worth reminding ourselves that negotiations, that will help define the *Withdrawal Agreement* and are centred around a new trading relationship, are yet to begin and that nothing, including progress with Phase 1 and the transition period, is agreed until everything is agreed.

The UK government is looking to negotiate a new trading relationship outside the customs union and the single market that is likely to be more limited in scope. It is hard to know at this stage if parliament will accept a more restricted trading arrangement should that emerge. After all, the House of Lords voted in favour of a customs union[1] earlier this month and, what is

Figure 1. Real GDP growth (per cent per quarter)



Source: ONS and NIESR forecast.
Note: ▪ is the preliminary estimate.

*NIESR. E–mail: a.kara@niesr.ac.uk.Thanks to Jagjit Chadha, Iana Liadze and Yanitsa Kazalova for helpful comments and suggestions. We also thank Yanitsa Kazalova for compiling the database. Unless otherwise stated, the source of all data reported in the figures and tables is the NiGEM database and forecast baseline. The UK forecast was completed on 27 April 2018.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Box A. The Brexit assumptions underpinning our forecasts

Recent developments in Brexit negotiations have not materially changed the outlook for the UK's exit from the European Union. We maintain our central forecast scenario of a 'soft' Brexit, with an elevated level of downside risk. There remains a high degree of uncertainty about the UK's future relationship with the EU. In March 2018, EU and UK negotiators published a draft legal text of the Phase 1 agreement, which will be part of the final withdrawal treaty, under the provision that nothing is agreed until everything is agreed. The text confirms that there will be a 21-month transition period after the UK exits the EU in March 2019 during which the country remains bound by regulations of the single market and customs union, including free movement of labour and budgetary contributions, but is free to negotiate new trade deals. To avoid a hard border between the Republic of Ireland and Northern Ireland, the draft text includes a backstop solution, which would effectively keep Northern Ireland in the single market and customs union should alternative, 'technical' solutions fail to materialise. In our view, a 'soft' Brexit therefore is the most likely outcome.

The specific assumptions in our central forecast are as follows:

- *UK trade and investment:* We assume the UK maintains a close but not frictionless trading relationship with the EU. This also reflects the Prime Minister's expectation that "people need to face up to some hard facts" and "life is going to be different". That less comprehensive relationship is reflected by negative residuals to the export and import volume equations as well as to the investment equation, given that less trade and higher uncertainty will likely weigh down on investment spending by UK-based firms and foreign direct investment.

- *Productivity:* The smaller degree of competition due to lower trade volumes, less investment and a potential reduction in skilled migration could drive productivity lower in the long run. Effects on labour productivity are likely to materialise only with a long lag and may be ambiguous in the short run if employment reduces as a result of Brexit. We have not explicitly introduced a Brexit-related productivity shock into our forecast, which therefore constitutes a key downside risk to our forecast.

- *Fiscal contributions:* Regarding the UK's financial contributions to the EU budget, a payments schedule is yet to be decided. The British government has already announced that it would seek associate membership in EU agencies, which would require financial contributions to be made, in addition to payments towards the 'divorce bill'. We have, as a result, adopted the latest OBR fiscal projections for EU contributions and assumed that the UK continues to make contributions beyond 2020 as if it were a member of the EU.

The risk of a more pessimistic scenario remains high. In our last *Review* we reported estimates for a case in which negotiations fail and the UK moves to a WTO-style trading relationship on exit. Our results show that this would cause a mild recession within one year and real GDP per head would be some £2,000 lower relative to our 'soft' Brexit case after a decade. In this *Review*, Erken *et al.* (2018) provide a more pessimistic view: their headline result for a 'hard' Brexit is that cumulative GDP growth could be 18 percentage points lower by 2030 compared to a scenario in which the UK remains in the EU.

NOTES

1 See also Hantzsche, A. and Kara, A. (2018), 'Deal, or no deal? The £2,000 question', NIESR blog, 16 February 2018.
2 Erken, H., Hayat, R., Prins, C., Heijmerikx and de Vreede I. (2018), 'Measuring the permanent costs of Brexit', *National Institute Economic Review*, 244, pp. 46–55.

This box was prepared by Arno Hantzsche and Amit Kara.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Table 1. Summary of the forecast — Percentage change

	2014	2015	2016	2017	*2018*	*2019*	*2020*	*2021*	*2022*
GDP	3.1	2.3	1.9	1.8	*1.4*	*1.7*	*1.8*	*1.7*	*1.7*
Per capita GDP	2.3	1.6	1.1	1.2	*0.8*	*1.1*	*1.2*	*1.1*	*1.2*
CPI Inflation	1.4	0.1	0.7	2.7	*2.4*	*2.1*	*2.0*	*2.0*	*2.0*
RPI Inflation	2.4	1.0	1.7	3.6	*3.9*	*3.9*	*3.5*	*3.6*	*3.4*
RPDI	1.0	5.3	0.2	0.2	*1.5*	*1.8*	*2.0*	*1.8*	*1.6*
Unemployment, %	6.2	5.4	4.9	4.4	*4.1*	*4.2*	*4.4*	*4.7*	*4.7*
Bank Rate, %	0.5	0.5	0.4	0.3	*0.6*	*1.1*	*1.6*	*2.0*	*2.3*
Long Rates, %	2.5	1.8	1.3	1.2	*1.6*	*2.3*	*2.8*	*3.2*	*3.6*
Effective exchange rate	7.4	5.6	–9.9	–5.2	*4.1*	*0.6*	*0.1*	*0.1*	*0.0*
Current account as % of GDP	–5.3	–5.2	–5.8	–4.1	*–4.0*	*–3.8*	*–3.9*	*–3.7*	*–3.4*
Net borrowing as % of GDP	5.3	4.2	2.8	2.7	*2.3*	*2.2*	*2.5*	*2.3*	*2.3*
Net debt as % of GDP	83.3	83.1	85.7	87.9	*88.2*	*88.4*	*87.2*	*85.1*	*86.4*

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.

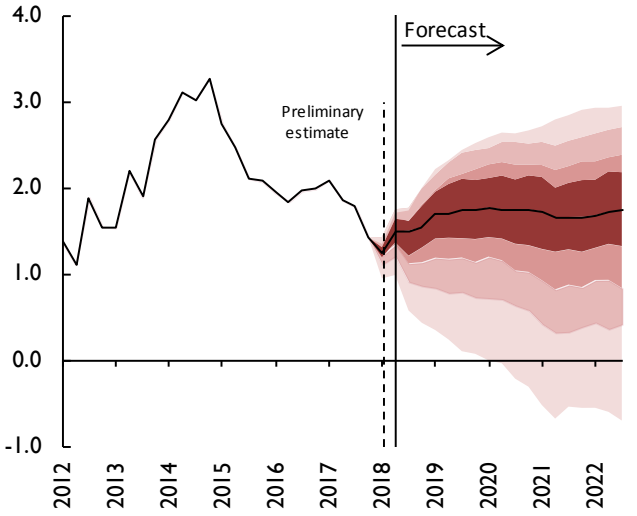
more, the opposition Labour party also confirmed its preference for remaining in the customs union.[2]

Put differently, the soft Brexit that underpins our central forecast is not an outcome that we believe will necessarily materialise, it is simply the one to which we assign a higher probability. As such the risk to our GDP growth forecast is skewed to the downside and the risk to inflation to the upside (figures 2 and 3) to represent the risk of a collapse in negotiations and trade that is based on WTO rules.

Important risks to our forecast are also coming from our supply-side judgements on productivity growth and the overall 'speed limit' of the economy. UK productivity has been particularly weak and disappointing since the financial crisis. So much so that the productivity gap relative to a pre-crisis trend is twice as big in the UK (18 per cent) as for the G7 (ex.UK) average (9 per cent).

More recently though, there have been some tentative signs of a recovery in hourly labour productivity in the second half of last year (see Supply Conditions section in this chapter). We have treated this recovery with caution for this forecast round and held our lower medium-term productivity forecast unchanged, but there are some good reasons to be optimistic. To start with, higher minimum wages and the very rapid increase in the living wage, together with lower levels of net migration that create labour scarcity, may well trigger business investment that can help raise labour productivity or raise total factor productivity (Riley and Bondibene, 2017).[3] The outlook for wages in the UK and in other G7 economies depends most crucially on labour productivity (Box B).

Figure 2. GDP growth fan chart (per cent per annum)



Source: NiGEM database, NIESR forecast and NiGEM stochastic simulations. Note: Each bound represents a cumulative decile of the probability distribution around the May 2018 forecast. The Bank of England's inflation target is 2 per cent per annum.

The Chancellor did not announce any new policies at the 2018 Spring Statement. The Office for Budget Responsibility (OBR) published an update of its fiscal and economic forecasts and the main message for fiscal policy remained unchanged – the government is on track

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Box B. Decomposing wages: the productivity gap persists

Ten years from the crisis, average real wages are growing considerably below the pre-crisis average across the OECD and in the UK in particular. We estimate that UK real wages are around 20 per cent below a continuation of their pre-crisis trend, similar to the shortfall in productivity. This underperformance in real wages is even more striking against a backdrop of record high employment levels and a record low unemployment rate.

The gap has stirred a debate in the UK and elsewhere on the relevance of the Phillips curve, which illustrates the relationship between wages and unemployment. In this box we estimate a wage equation for the G7 economies. We show that a wage curve that is augmented with a measure of productivity helps explain the weakness in wage growth. Productivity grew by an annual average of 1.5 per cent in the five years before the crisis across the G7; the average of the past five years is half of that.[1] This entails a shift in the Phillips Curve – for an unchanged level of the unemployment rate we expect a lower wage growth. Our regression estimates suggest that other factors that contribute to wage developments in the G7 are labour market slack and inflation expectations. Taking all these competing explanations together, we show that productivity is by far the most important contributor to low wage growth in the G7 and also for the UK.

Data and model description

We use annual data for G7 countries between 1990 and 2016, collected from the OECD (www.data.oecd.org). As the dependent variable, we use the annual growth rate in nominal labour compensation per hour worked in local currency, which includes gross wages and salaries as well as employers' social security contributions. For regressors, we use the deviation of the unemployment rate from a five-year moving average. The inflation measure is the year-on-year growth rate of the harmonised index of consumer prices. The augmented model includes a productivity measure which is expressed as output per hour worked. Another model specification includes a labour market slack indicator, such as the share of involuntary part-time workers out of total employees. We perform the analysis at the aggregate level instead of differentiating by sectors because of the concern that people frequently move across sectors, preventing a clear separation between sectors.

The baseline model is as below:

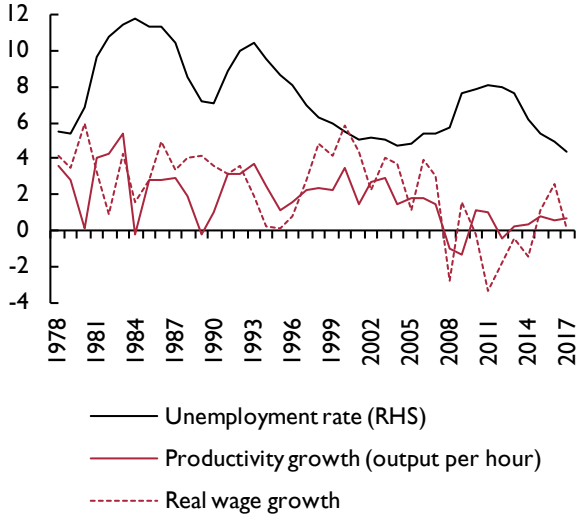
$$\pi^{w}_{i,t} = \alpha_i + \beta_1 \pi^{w}_{i,t-1} + \beta_2 \pi_{i,t-1} + \beta_3 \left(U_{i,t} - \bar{U}_{i,t} \right) + \varepsilon_{it} \quad (1)$$

where i is country and t is time, π^w is year-on-year growth in compensation per hour (wage inflation)[2], π is price inflation, and U is the unemployment rate and $\bar{U}$ is a five-year moving average rate.

Our preferred specification augments the equation above with productivity growth (prod):

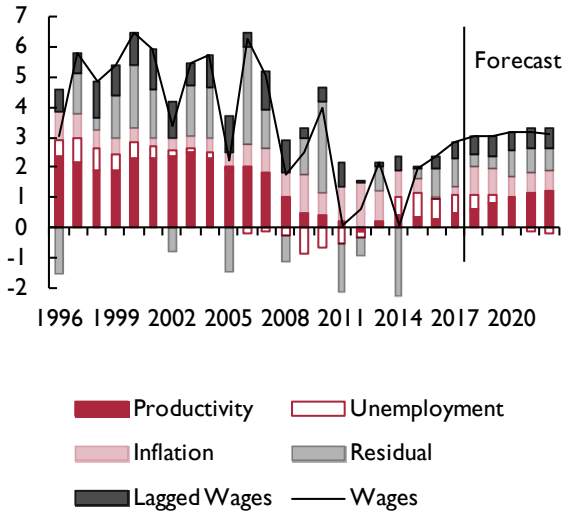
$$\pi^{w}_{i,t} = \alpha_i + \beta_1 \pi^{w}_{i,t-1} + \beta_2 \pi_{i,t-1} + \beta_3 \left(U_{i,t} - \bar{U}_{i,t} \right) + \beta_4 prod_{i,t} + \varepsilon_{it} \quad (2)$$

Figure B1. UK real wage growth, productivity growth and unemployment rate



Source: NiGEM database.

Figure B2. Contributions to UK wage growth (percentage points)



Source: NiGEM database, and NIESR forecasts.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Box B. (continued)

Table B1. Estimation of wage Phillips curves

	I	II	III	IV
Lagged wage inflation	0.311***	0.205**	0.303***	0.179*
Unemployment rate – deviations from trend	–0.358***	–0.453***		–0.449***
Lagged Inflation Rate	0.350**	0.342**	0.261*	–0.014
Trend productivity growth rate		0.972**	0.541***	1.168**
Involuntary part–time workers			–0.052**	
Error correction term				–0.142
Constant	0.186	–0.509	3.34**	0.080
Adjusted R2	0.4557	0.516	0.504	0.402
N	155	150	141	102

Notes: the sample is in annual frequency and includes the G7 countries from 1990 to 2016. According to the Pesaran (2007) and Maddala and Wu (1999) Panel unit root tests – H0: the series has one unit root – the dependent variable is stationary as the tests yields a P-value of 0.00. Country and time fixed effects are used throughout all model specifications. The unemployment rate is expressed as the deviations from its five-year moving average rate. Trend productivity growth is computed as a five-year moving average. The error correction term includes the lagged level of wages and productivity as defined in NiGEM. * p<0.10, ** p <0.05, ***p<0.01.

Our results are shown in table B1. Consistent with IMF (2017) and Anderton *et al.* (2017), we find that an increase in unemployment by 1 percentage point leads to a decrease in wage growth by around 0.4 percentage points *ceteris paribus*. An equivalent increase in productivity growth leads to a rise in wage inflation of around 1 according to our key model specification. Using the share of involuntary workers for total workers in place of the unemployment rate[3] yields a smaller decrease in wage inflation compared to the unemployment rate. Finally, wages are relatively flexible and do not show too much persistence as captured by the coefficient on the lag of wages.

UK wage growth story

Using the results from the G7 panel regression (model specification II), Figure B2 shows the percentage point contributions of each of the competing factors to UK wage dynamics. Productivity made a large positive contribution to wage growth up until 2007 while it has been almost nil ever since. The recent uptick in wages in the second half of last year came hand in hand with productivity growth reaching its highest reading in six years. Unemployment dragged wage growth lower from 2008 until 2010 and added to wage inflation since 2014. The negative residuals in the years from 2010 are likely due to the cap on public sector wages introduced that year. Recent NIESR research has estimated that public sector wages had fallen more than 3 per cent below their equilibrium level in 2016–17 (Dolton *et al*, 2018). The period from 2017 onwards is based on our newly published forecasts until 2022. Accordingly, we expect a gentle rise in nominal wages, in line with a soft recovery in productivity, while the unemployment rate stabilises at a slightly higher level than where it currently stands.

NOTES

1 For a detailed analysis of the underlying causes of the productivity puzzle see e.g. Kazalova and Naisbitt (2018), Chadha *et al.* (2017).
2 We use nominal wage growth instead of real in line with other studies such as IMF (2018), Mojon and Ragot (2018) and Bell and Blanchflower (2018). We use lagged inflation as a regressor as a proxy for inflation expectations, in line with adaptive expectations.
3 We also include the unemployment rate together with our proxy for underemployment and the results are not significantly different.

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This box was prepared by Amit Kara, Marta Lopresto and Rebecca Piggott.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

to meet its fiscal targets mainly by spending less each year as a fraction of GDP.

In an important departure from the standard NIESR forecasting process, we have deviated from official spending plans and assumed as our central case that the government will relax the fiscal straightjacket somewhat later this year and in the 2019 Spending Review. The government's quest to lower the total managed expenditure-to-GDP ratio to a level below its long-run average is unsustainable in our view. We have, therefore, built into this forecast a higher path for government consumption that includes higher public sector wage growth (see Public Finance section and Box C in this chapter and the Commentary earlier in this *Review*).

Inflation is set to continue falling from an average of 2.7 per cent in 2017 to 2.4 per cent this year, before settling close to the target rate of 2 per cent in 2019 and beyond. As discussed above, there are countervailing risks to that central forecast from the two major risks identified in this forecast, namely Brexit and productivity. Taking both together, we judge the overall risk to inflation to be skewed to the upside.

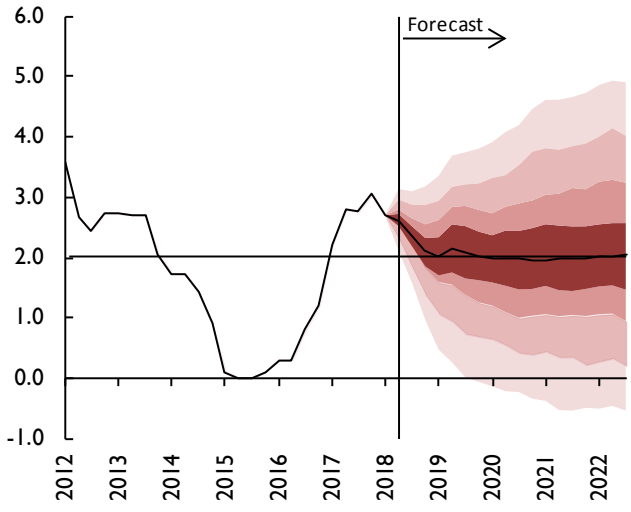
Figures 2 and 3 are generated from our structural model, NiGEM, that allows the forecaster to apply judgement and convey a complete narrative. The fan is achieved by bootstrapping historical forecast errors around the forward path of the variables. These forecasts can be benchmarked against those published by the Warwick Business School Forecasting System, which combines state-of-the-art statistical models weighted solely by the forecasting performance of each model (Box D). On their forecasts, real GDP growth for the final quarter of 2018 is most likely to be somewhere between 1–2 per cent (NIESR = 1.4 per cent) but their forecast is skewed to the upside, while ours points to a downside risk mainly to allow for the possibility of a hard Brexit. The growth forecast for the final quarter of 2019 is expected to be between 2–3 per cent compared with the NIESR forecast of 2 per cent.

Similarly, the WBSFS model points to CPI inflation between 2–3 per cent as the most likely outcome for both the final quarters of 2018 and 2019 compared with our forecast of 2.1 per cent and 2.0 per cent respectively.

Monetary policy

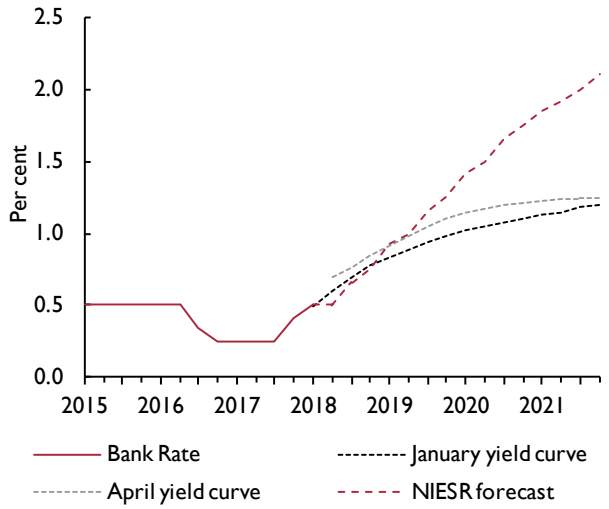
As before, we maintain our recommendation that the Bank of England keeps interest rates on a path to normalisation (Chadha, 2017). We see the policy rate rising by 25bp every six months until Bank Rate reaches 2 per cent by the end of 2020. We have, however, pushed back the timing of the next rate increase by three months from May to August this year, in response to comments by the governor

Figure 3. CPI inflation fan chart (per cent per annum)



Source: NiGEM database, NIESR forecast and NiGEM stochastic simulations.
Note: Each bound represents a cumulative decile of the probability distribution around the May 2018 forecast. The Bank of England's inflation target is 2 per cent per annum.

Figure 4. Market-implied paths for short-term interest rates and NIESR forecast



Source: Bank of England and NIESR forecast.
Note: The January and April 2018 curves are estimated using instantaneous forward OIS rates in the 15 working days to 26 January and 20 April respectively and are plotted from 3 months onwards.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Box C. The fiscal policy conditioning assumption

Selecting the path for fiscal expenditure and taxes is a critical decision for a modeller when assessing the prospects for overall (or aggregate) demand in the economy. Unlike the other main components of demand: consumption, investment and net trade, fiscal policy can be said to have a substantially autonomous component. And so in modelling aggregate demand, decisions about the path of public expenditure and the extent to which it is financed by debt issuance or taxes can be set more or less exogenously with respect to other developments in the economy. In the language of economics it is a control rather than behavioural variable. The choice on fiscal policy will have implications for overall demand and also the path of monetary policy, as it may affect the balance between aggregate demand and supply. To date the National Institute of Economic and Social Research has used the same assumptions on government spending as the OBR and the Bank of England by conditioning on announced plans by the Chancellor for spending. But we do not take the OBR tax revenue projections and instead allow our fiscal solvency rule to determine tax revenue. The adoption of the same fiscal expenditure assumption has meant that the differences in judgements about the evolution of the economy have largely derived from the response of behavioural variables to changes in the domestic economy and key judgements about the rest of the world. But we are now allowing another channel, that of fiscal policy, to speak.

Work by the Institute (see Commentary in this *Review*) suggests that government expenditure as both consumption and investment may have fallen below the requirements of the economy. For this forecast we have therefore assumed that public expenditure will be higher from 2019–21 and have focussed on a stronger path for government consumption and its deflator but not on government investment. We forecast an annual rate of growth of nominal government consumption some 3 percentage points higher than in the OBR's forecast over the next three years. This pick-up results from a larger increase in real spending but also because we expect the cost of public services to rise, in particular public sector pay. As a result, we forecast total managed expenditure to remain stable as a share of GDP over the forecast horizon, at just below its postwar average of some 39 per cent. Given that we assume no adjustments to the government's taxation plans and no substantial productivity increases in the near term, our fiscal forecast implies that the public sector deficit remains just above 2 per cent of GDP. As a consequence, public sector net debt continues to stay above 85 per cent of GDP and we therefore project a breach in the government's current fiscal rules.

This box was prepared by Jagjit Chadha.

of the Bank of England and the soft preliminary estimate of 2018 first quarter GDP of 0.1 per cent. Inflation has also surprised to the downside in the UK.

The decision to delay the next increase is finely balanced in our view but some caution might be warranted to allow for the fog of uncertainty around first quarter activity data to lift and for confirmation that economic growth has returned to its potential. Barwell and Chadha (2013) argue that the Bank of England must provide explicit guidance on the take-off path in much the same way as the Federal Reserve. That will help reduce money market volatility in the face of timing or tactics and at the same time allow the markets to trade its own information against the central bank path.

Market expectations of Bank Rate have risen since our forecast in February (figure 4). Although market expectations have converged towards our view, our conditioning path remains more aggressive than market expectations. This is for three reasons.

First, our central forecast assumes a soft Brexit scenario where the UK maintains a high level of market access for both goods and services to the EU. Since our February forecast, talks with the EU have progressed and the government has reached a transition agreement but, of course, nothing is certain until the final agreement. The market view, by contrast, incorporates a spectrum of possibilities ranging from a soft to a hard Brexit.

Second, we assume that the recent downturn in hard data and leading indicators is temporary and largely attributable to adverse weather conditions in the UK and other parts of Europe in the first quarter of this year and the influenza epidemic in Northern Europe. Our forecast assumes that the UK economy recovers some of that lost output in the second quarter of this year.

Finally, in what is a major departure from standard NIESR forecasting process, we have assumed that the government will struggle to maintain the fiscal straightjacket that is embedded in the OBR's latest fiscal forecast (See Box C). Specifically, we have built into this forecast a higher path for government consumption. Crucially, from the perspective of monetary policy, some of that additional spending is to finance higher public sector wages which will raise the government consumption deflator with some spillover into the private sector (see Public Finance section below).

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

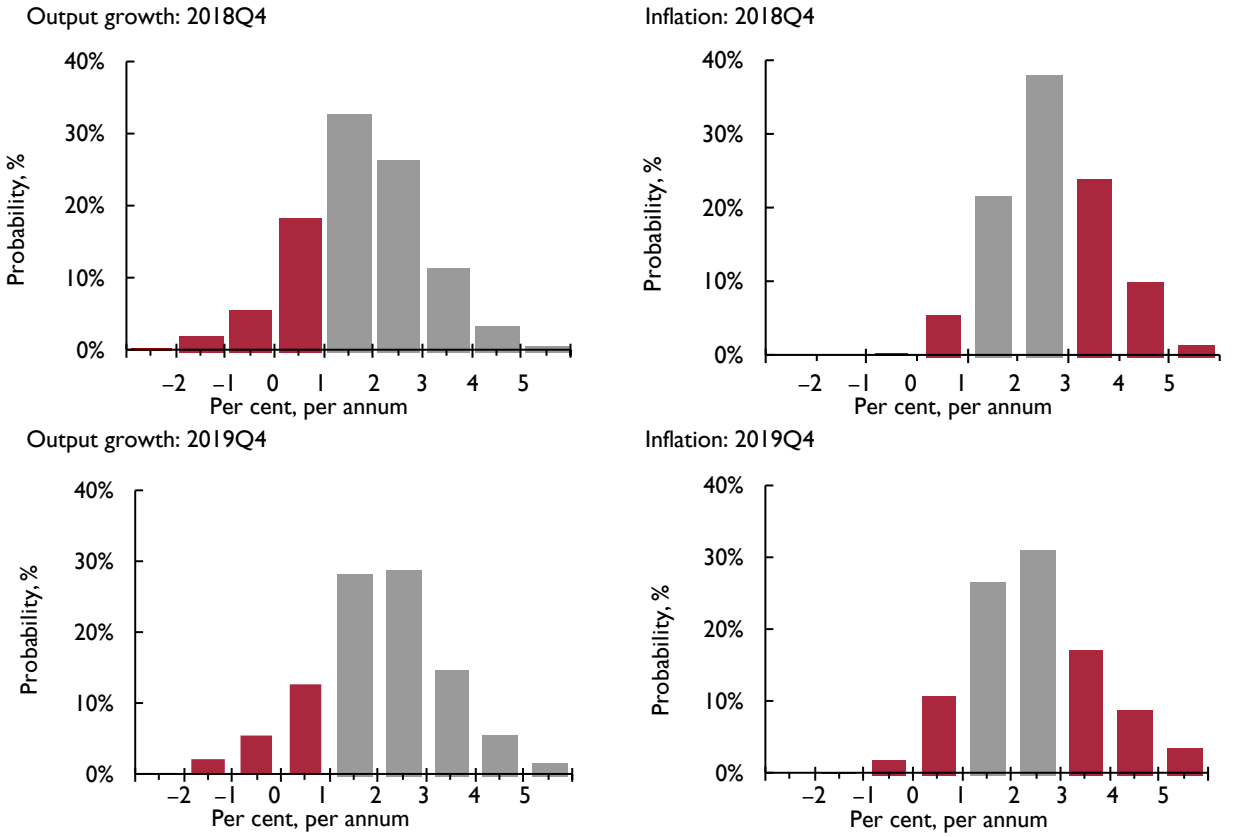
Box D. Forecasting with a benchmark: the Warwick Business School forecasting system

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 the 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 for measuring probabilities.

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



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

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Box D. (continued)

Figure D1 presents WBSFS's latest (as of 19 April 2018) probabilistic forecasts for real GDP growth and inflation – defined as year-on-year growth rates for 2018Q4 and 2019Q4 – as histograms. The information set used to produce these forecasts includes information on GDP growth up to 2017Q4 and the latest CPI inflation estimate for March 2018.

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

Inspection of the forecasts for output growth for 2018Q4 in table D1 suggests that, compared with our forecasts made one quarter ago, relatively little has changed. The most likely range for the forecast remains for economic growth between 1 per cent and 2 per cent in 2018Q4. But looking out further to 2019Q4, a higher growth between 2 per cent and 3 per cent is now marginally more likely. As table D1 shows, the difference between the forecasts for 2018Q4 and 2019Q4 is explained by modest downward revisions to the risk of 'low' growth (growth less than 1 per cent); the probability of growth less than 1 per cent is 26 per cent for 2018Q4 and falls to 20 per cent for 2019Q4.

Similarly, for inflation, our forecasts are little changed relative to those published in this *Review* one quarter ago. An inflation rate between 2 per cent and 3 per cent is the most likely outcome in the year ending 2018Q4, with a 38 per cent probability (up by just 1 per cent from the previous estimate of 37 per cent). But the WBSFS predicts that inflationary pressures marginally dissipate in 2019Q4, with a probability of around 27 per cent of inflation falling in the 1–2 per cent range and 31 per cent in the 2–3 per cent range. In comparison with our previous forecasts, the probability of inflation above 3 per cent has increased from 33 per cent to 35 per cent in 2018Q4 and from 27 per cent to 30 per cent for 2019Q4.

Table D1. Probability event forecasts for 2018Q4 and 2019Q4 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 (April 2018)			
2018Q4	7%	26%	58%	41%	6%	35%
2019Q4	8%	20%	49%	43%	13%	30%
			Previous Forecasts (January 2018)			
2018Q4	9%	27%	56%	41%	8%	33%
2019Q4	8%	21%	48%	44%	17%	27%

The forecast update shifts the inflation distribution marginally to the right, but where the probability of being in the 1–3 per cent range stays the same at 59 per cent, as the downside risks to inflation have decreased by the same amount as the upside risks have increased. The implication drawn is that the lower CPI inflation estimate for March 2018 has made very little difference to our inflation forecasts.

This Box was prepared by Ana Galvão, Anthony Garratt and James Mitchell.

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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The MPC has long stated that it will continue to reinvest the proceeds from maturing bonds bought under its Asset Purchase Facility until the policy rate reaches the threshold of 2 per cent. That guidance has not changed and so we would expect the Bank's balance sheet to shrink only from mid-2021 as bonds mature, given that on our forecast the threshold is reached at that point. We assume that the Bank will not actively sell bonds back to the market. It is worth noting that this 2 per cent guidance was announced in November 2015 when the lower bound on the policy rate was thought to be 0.5 per cent. Since then the MPC cut Bank Rate to 0.25 per cent and also expanded the QE programme. The MPC should clarify its stance on the reinvestment threshold in light of the newer lower bound.

At its March meeting, the Financial Policy Committee (FPC) held the countercyclical capital buffer (CCyb) rate unchanged at 1 per cent. The CCyb rate was raised at the November 2017 meeting from 0.5 per cent to 1 per cent effective November 2018. Brexit remains a key risk for the FPC and in its judgement the UK banking system has the resilience to continue supporting the economy even through a disorderly Brexit.

Risks to monetary policy

As before, Brexit remains a key risk to our monetary policy forecast. Although the risks have dissipated somewhat because of the transition agreement, there is still the possibility of a cliff edge outcome next year if the next stage of the negotiations related to the final trading arrangements fails. Our central forecast is conditioned on a soft Brexit where the UK maintains a very high level of EU market access. If, instead, negotiations fail and the UK ends up trading on WTO terms, there is a heightened possibility that sterling depreciates again exerting upward pressure on inflation. Productivity prospects would also be damaged. This scenario is discussed more fully in the February 2018 *Review*. The monetary policy response will depend on the size of the shock to demand relative to the supply capacity. If uncertainty spikes higher and demand falls rapidly, the MPC should respond to the shock by easing monetary and credit policy provided inflation expectations remain anchored.

Another risk to our monetary policy view relates to the evolution of whole-economy productivity. After ten years of disappointing productivity performance and persistent downside surprises, we revised lower our forecast for long-term productivity growth in November last year of just over 2 per cent to under 1.5 per cent. At the time, we pointed to upside risks to that revised forecast. As it happens, the ONS has reported that upside surprise with output per hour worked rising by 1.0 per cent and 0.7 per cent in the final two quarters of last year, the sharpest six-month rise since 2011. There are many reasons to expect productivity to rise, but for now we are treating this uptick with some caution and holding our assumption on productivity growth unchanged (see Supply section for more details). All things equal, a quicker return of productivity growth to the pre-crisis average would require a lower policy rate in the short term to lift growth to its potential.

Another key domestic risk relates to wage growth. Unemployment has fallen to a 40-year low and employment is at a record high, yet wage growth remains subdued. The analysis presented in Box B shows that the low level of unemployment has started to exert an upward pressure on wages from 2017 and we expect that to continue over the next two years. Meanwhile, the 1 per cent cap on public sector pay that has been in place since 2010 will be lifted in 2018–19. A rapid convergence to private sector levels, that is not accompanied by gains in productivity, will raise inflationary pressures (Box B in the November 2017 *Review*). Separately, the National Living Wage is rising faster than productivity growth. Any material spillover from this into the next rung of wages, or wages more broadly, could lead to further inflationary pressure.

Our view on monetary policy is conditional on a benign global backdrop where growth averages around 4 per cent in 2018 and 2019, and a subdued outlook for inflation. Should prices rise faster than our forecast, central banks will respond with tighter monetary policy. Another important risk highlighted in the World section of the *Review* relates to trade policy. The US has imposed tariffs on a small number of goods and retaliation is relatively contained, but there is a risk that the tariff wars spread to other goods and services and also involve more countries. On the plus side, there is scope for stronger GDP growth and a continuation of the 'lowflation' backdrop in a number of Euro Area economies where unemployment is still high.

Prices

Consumer price inflation is falling faster than expected, reaching 2.5 per cent in March. This faster-than-expected drop is the latest signal that the inflationary effects of the depreciation of sterling in 2016 are waning.

Figure 3 shows recent movements in inflation as well as our forecast for the years ahead, which is conditional on our forecasted monetary policy path. In view of recent

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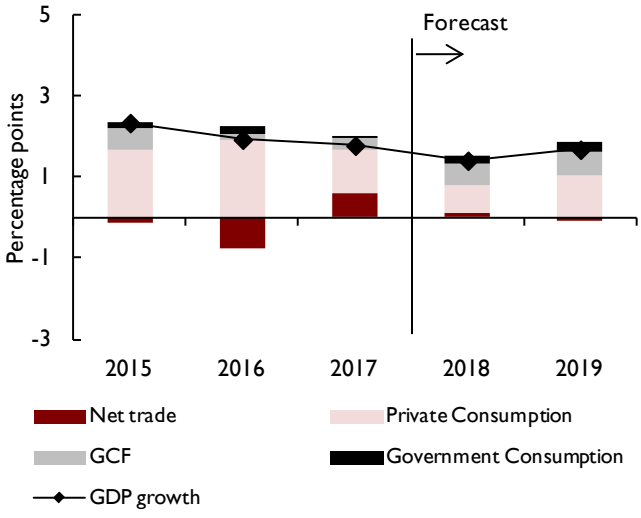
data outturns, we have revised down our forecast for CPI inflation in 2018 to 2.4 per cent, 0.3 percentage point lower than our previous forecast. Thereafter, our view is that inflation will remain close to the target from 2019 onwards.

There are a number of risks to this forecast. One upside risk is a continuation of the recent pick-up in oil prices in sterling terms from roughly £20 a barrel to £50, which is likely to add to inflationary pressure in the UK (Lennard and Theodoridis, 2018). Another is some cost-push pressure, emerging from a number of potential sources, such as from a further reduction in underemployment, a steepening of the Phillips curve, spillovers from a forecast easing of public sector pay restraint to the private sector, or from a trickle-up effect associated with the rising National Living Wage. A final upside risk is a hard Brexit, which might involve a repeat of the depreciation of sterling and the pass-through of 2016.

According to the Bank of England's *Inflation Attitudes Survey*, there has been little change recently in short-run inflation expectations. At the 12- and 24-month horizons, expected inflation was 2.9 per cent, unchanged in February from the November 2017 survey, while at the 5-year horizon, expectations fell from 3.5 to 3.4 per cent. Financial markets also expect inflation of roughly 3 per cent at the 1- to 5-year horizons (Bank of England, 2018). The Bank's survey of professional forecasters, on the other hand, expects inflation of 2 per cent at the 3-year horizon, which is more consistent with the Bank of England's target and our forecast.

Figure 5. Contributions to GDP growth



Source: NiGEM database and NIESR forecast.
Notes: GCF stands for gross capital formation.

Following the increase in Bank Rate in November, and the expectation that the Bank of England will continue on the path to interest rate normalisation (Chadha, 2017), the idiosyncrasies of British price indices will become an important issue. Historically, there has been a positive wedge of roughly 1 percentage point between RPI inflation and CPI inflation. This wedge arises for a number of reasons, such as the treatment of mortgage interest payments, other differences in the coverage of goods and services, formula effects and differences in weights. The ONS calculates that mortgage interest payments, which are included in RPI but not CPI, have accounted for a trivial fraction of the difference between the two in recent years. However, between 1998 and the financial crisis, when interest rates were more variable than since the crash, mortgage interest payments were an important driver of the wedge between the two indices. In this period, we estimate that a 1 percentage point increase in Bank Rate raised the RPI relative to the CPI by 0.5 percentage points. This is important as interest rate normalisation could once again thicken the wedge, which in turn has complex implications for the finances of households and the government. The CPI, for example, is used to index tax allowances and thresholds, benefits and public service pensions, while the RPI is used to calculate interest on index-linked gilts and student loans (OBR, 2018). On balance, an increase in RPI relative to CPI would have a net negative impact on the public finances in the short run but a more negligible effect thereafter (OBR, 2017).

Components of demand

We have revised down our GDP growth forecast for 2018 from 1.9 per cent to 1.4 per cent. One reason for this revision is the disruption caused by extreme weather conditions in the first quarter of this year. According to the ONS, the economy expanded by just 0.1 per cent over this period, which is broadly in line with our monthly nowcast and some 0.3 percentage points lower than our February forecast.

There is reason to be cautious about the preliminary GDP estimate published by the ONS, as it is based on relatively little firm information. Back in 2010, when the UK suffered from extensive flooding, the first estimate for final quarter GDP growth was –0.5 per cent. That

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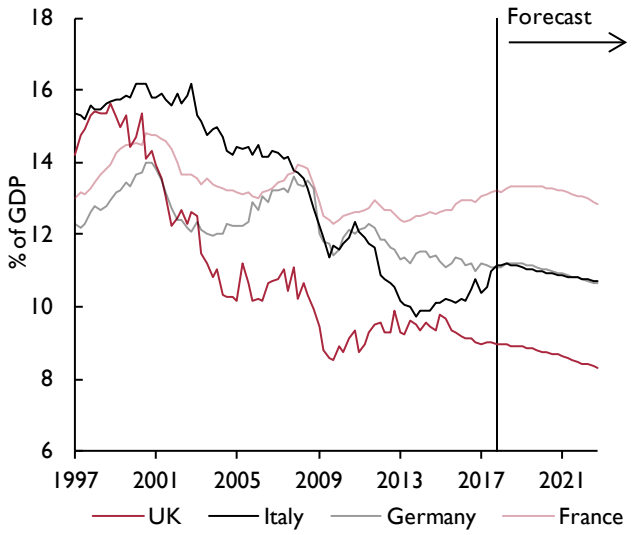
Figure 6. Business investment in the UK, France, Germany and Italy



Source: NiGEM databse and NIESR forecasts.

estimate has since been revised up by +0.6 percentage point to +0.1 per cent in subsequent data vintages.

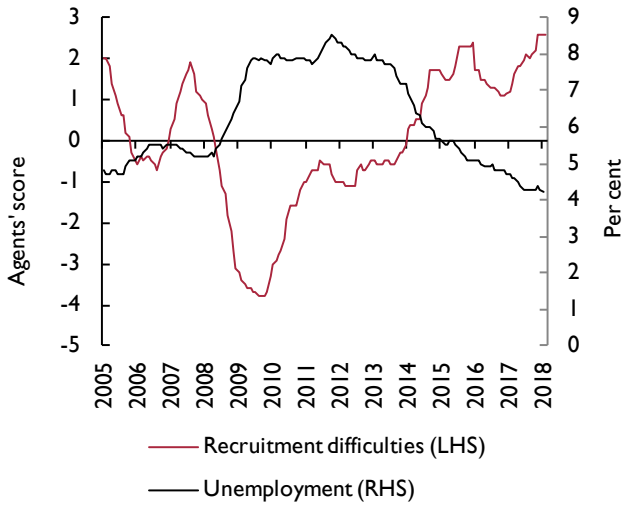
Available indicators of demand have been mixed, though the pattern partly reflects a continuation of the rebalancing of demand away from consumers since the EU referendum. Consumer confidence reported by the GfK survey has dipped, dented by rising prices, sluggish household income, and the prospect of interest rate hikes. Also, retailers have been badly affected by the March snows as reported by the CBI Distributive Trades survey, which revealed a harsh drop in the sales balance, although the BRC survey gathered later in the month was less pessimistic. Looking at the health of the housing market, the RICS survey on sales per surveyor tells a downbeat story. Sales peaked in 2014 and have been softening ever since, in line with the weakness of the construction PMI. On the other hand, business surveys, such as those from the CBI and Markit PMI, continue to paint a healthy picture of output growth, while official data on growth have been volatile, and, if anything, a little weaker, especially in the construction and services sectors.

Turning to the expenditure components, the most important change relates to the treatment of government spending in our forecast. Instead of our usual practice of adopting the OBR's forecast for government spending, this time we have built in a higher path for both nominal and real government consumption (see Box C). As a result, we see government spending adding 0.2 and 0.3 percentage points to real GDP growth over the next two years (figure 5).

Turning next to household spending, we see a modest slowdown this year in part because of the disruption to activity in the first quarter of this year and also because of the slowdown evident in surveys such as those from the Bank of England Agents and the British Retail Consortium. Real personal disposable income (RPDI), which tends to be the main driver of consumer spending, rose by 1.5 per cent year-on-year in the final quarter of 2017, the highest rate since early 2016. It is set to rise further over the course of this year as well as next year in part because of higher wages but also because inflation falls as the impact of the post-EU referendum currency depreciation fades. Against that, we expect the saving ratio to rise, from 5.3 per cent in the final quarter of last year to an average of 5.5 per cent this year and 5.7 per cent next year, as the unemployment rate nudges higher. Some of this recovery in the saving ratio is explained by the rolling out of auto-enrolment into workplace pensions.

House prices and consumption tend to move hand-in-hand. The Halifax and Nationwide price inflation measures are trending lower, while our preferred measure of prices, published by HM Land Registry, is still pointing to firm growth in house prices at around 5 per cent per year. As before, we expect house prices

Figure 7. BoE agents recruitment difficulties



Source: Bank of England and ONS.

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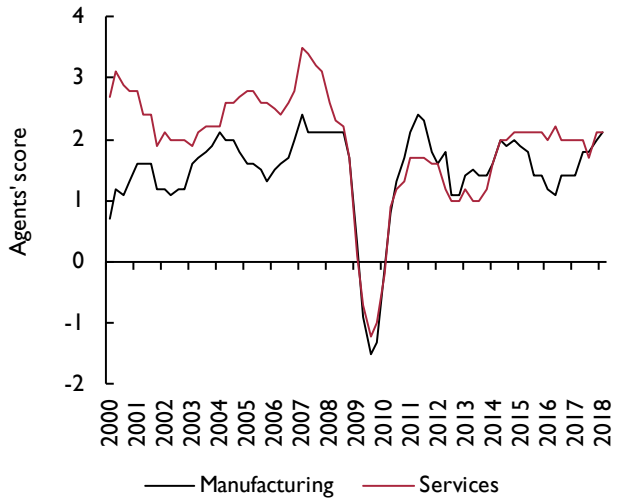
Figure 8. BoE agents labour costs



Source: Bank of England

to start cooling off mainly on the back of the additional stamp duty on second homes, less generous tax allowance for buy-to-let properties and the squeeze in real incomes. Also, the gradual increase in Bank Rate, that we have in our forecast, will push up mortgage interest rates.

Business investment is expected to remain subdued over the forecast horizon mainly because of Brexit-related uncertainty. Historically, the investment-to-GDP ratio in the UK has been low relative to other G7 economies. Consistent with the view that uncertainty is holding down investment, that ratio was significantly below the three major Euro Area economies in 2017 (see figure 6). The Bank of England's Agents' score of *Investment Intentions* picked up from the second quarter of 2017 after a steep fall post-referendum but remains modest as a result of economic uncertainty. We expect business investment to grow by around 2 per cent this year and to stabilise at a growth rate of between 2 and 3 per cent in the medium term.

Net trade contributed 0.6 percentage points to real GDP growth last year and is set to make another positive contribution to growth this year. On average, we expect net trade to make a positive contribution of 0.2 percentage point to growth in the three-year period from 2017 through to next year. This is a significant improvement from the past as net trade has on average subtracted some 0.3 percentage points from UK GDP growth since 1997. The main driver for the positive contribution is weak domestic demand and robust export growth that has been triggered by a weaker currency and a strong recovery in the Euro Area.

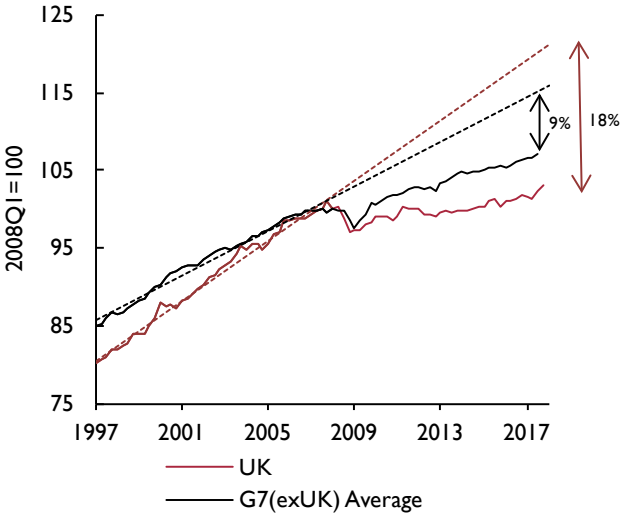
Supply conditions

Employment and labour costs

The unemployment rate fell to 4.2 per cent in February, its lowest level since 1975, down from 4.3 per cent in January. The Bank of England's recruitment difficulties index, which measures the scale of general recruitment difficulties across the economy, has reached its highest level since records began in 2005 (figure 7). This tightening of the labour market does not seem to have put much upward pressure on wages until recently. This has prompted some economists (e.g. Farmer and Nicolò, 2018) to argue that the relationship between wage growth and unemployment, as summarised by the Phillips curve, has broken down. Box B in this *Review* presents evidence to suggest that it has not done so but that weak real wage growth has been caused by dismal productivity growth.

The Bank of England's Agents' scores for labour costs point to a moderate uptick in the three months to February compared with the same period one year earlier (figure 8), while employment intentions are indicative of modest increases in hiring. Pay settlement data from XpertHR show a 2.5 per cent mean and median annualised pay increase in the three months to

Figure 9. International productivity comparisons



Source: NiGEM database and forecast.
Notes: GDP at market prices, per person per hour.

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March 2018. The assumption underlying our forecast is that real labour costs will continue to increase at a moderate rate throughout 2018 as firms find it increasingly difficult to recruit workers, especially with the appropriate skills.

Productivity

The dismal productivity performance of the UK economy since the crisis means that the level of real GDP in the final quarter of 2017 was approximately 18 per cent below the level it would have been if pre-crisis trends had continued. This is twice the size of the equivalent gap for the average of the rest of the G7 countries (figure 9). However, there have been some tentative signs that productivity has started to accelerate. Output per hour picked up sharply in the final quarter of 2017, expanding by 1 per cent year-on-year which followed on from strong growth in the previous quarter. However, this was largely due to a fall in average hours worked in the second half of 2017, rather than stronger output growth. If hours worked data, which are sourced from the Labour Force Survey and can be erratic, were subject to an upward revision, this pick-up in productivity could be eradicated, as was the case in 2011. The ONS (2018) defends these data by highlighting that the industries that are experiencing higher employment growth tend to be those where average hours worked are already below average for the economy as a whole. Our underlying assumptions regarding productivity are unchanged since our February forecast and we expect modest growth in output per hour this year and an acceleration into the medium term. Thus, in the event that the most recent average hours data are in fact accurate, this presents an upside risk to our output forecast.

The National Living Wage (NLW), which applies to those aged 25 and over, and the National Minimum Wage (NMW) for those aged 21–24 both rose by 33p in April, reaching £7.83 and £7.38 per hour respectively. The NLW must rise to 60 per cent of median earnings in 2020 and for that to be achieved the Low Pay Commission projects the NLW to rise by around 10 per cent over the next two years to £8.62 per hour. Riley and Bondibene (2017) exploit the introduction of the NMW to Britain and subsequent increases to identify the effects of minimum wages on productivity. They find evidence to suggest that labour productivity rose in response to these changes, and this was associated with increases in total factor productivity rather than a reduction in employment or capital–labour substitution. If these results hold for the NLW, which is broader in scope, we could see a large positive effect on productivity. Forth and Rincon-Aznar (2018) show that raising productivity in the UK's low-wage, high-employment sectors, such as retail and hospitality, to levels seen in other advanced economies could eliminate around 20 per cent of the total productivity difference relative to countries like the Netherlands, Germany and France.

In our November 2017 *Review,* we highlighted that one factor contributing to the observed productivity puzzle could be that, in a weak wage growth environment, firms have substituted labour for capital and failed to undertake total factor productivity improving measures such as training and organisational change. This has held down productivity and thus wage growth in a self-reinforcing cycle. Chadha *et al*. (2017) also conclude that the financial crisis has led to a change in the mix of capital and labour employed and a sharp decline in total factor productivity. We expect that as labour costs rise due to increasing scarcity of workers, firms will be forced to increase labour productivity.

For further discussion of the productivity puzzle, see Lazarowicz (2018) who summarises the work presented at NIESR's 80th anniversary special session at the recent Royal Economic Society Conference. In addition, a recent virtual special issue of the *National Institute Economic Review* collects some of the best *Review* articles on the matter.

Public finances

The 2018 Spring Statement

In the 2018 Spring Statement, the Chancellor kept his promise and did not alter the government's fiscal policy stance. The Office for Budget Responsibility (OBR) did not substantially revise its economic forecasts and continues to expect weaker economic growth than we do, of around 1.5 per cent per annum until 2022, mainly due to more pessimistic assumptions about Brexit. Total managed expenditure is projected to carry on falling as a share of GDP, by around 1 percentage point from 38.4 per cent in 2018–19 to 37.6 per cent in 2022–3. The government has made clear that unless the OBR's growth forecasts are revised upwards, additional spending will remain limited. Continued spending restraint means that the OBR expects current fiscal targets to be met. The cyclically adjusted budget deficit falls to 1.3 per cent of GDP in 2020–21, leaving headroom of 0.7 per cent of GDP towards the fiscal mandate; public sector net debt as a percentage of GDP enters a downward path in the current financial year, i.e. two years before the supplementary target, primarily because the Bank of

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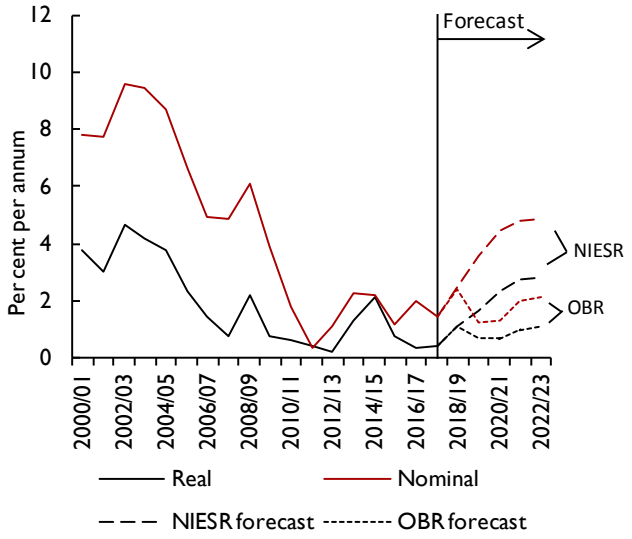
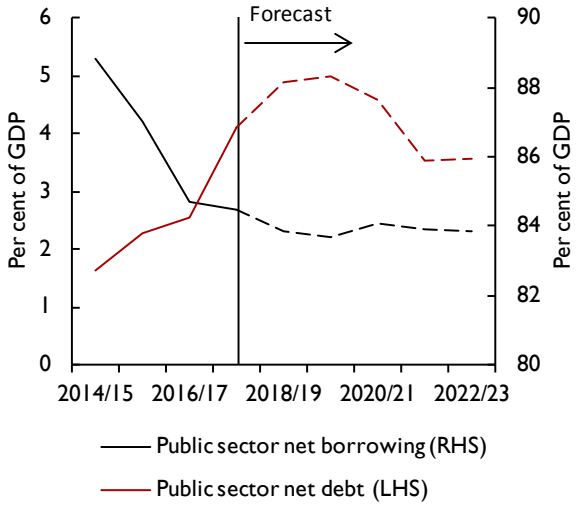
Figure 10. Government consumption, annual growth



Source: NIESR forecast and OBR.

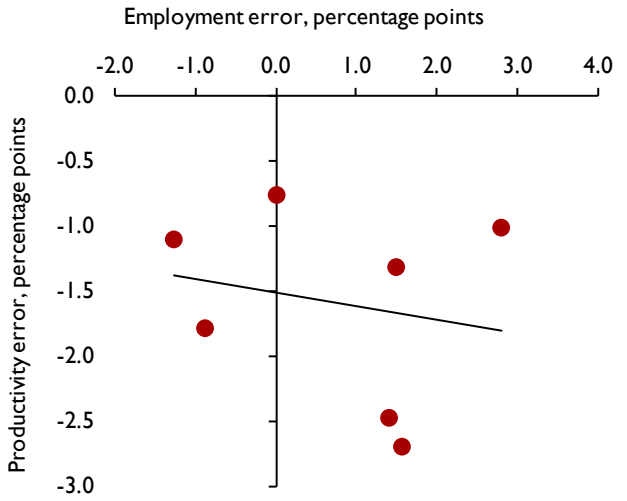
Figure 11. Public finances forecast



Source: NiGEM database and NIESR forecast.

England's Asset Purchase Facility scheme will mature; and welfare spending is expected to fall below the 2022–3 cap. The preliminary outturn estimate from April 2018 for public sector net borrowing in 2017–18 is £42.6 billion, £3.5 billion lower than in the previous year. This is £2.5 billion lower than the OBR's projection for the 2018 Spring Statement, but £3.8 billion higher than forecast two years ago and prone to further revisions.

Figure 12. OBR productivity and employment growth surprises



Source: OBR, ONS and NIESR calculations.
Notes: This chart shows forecast errors on an annual basis since 2011. The productivity forecast error is the difference between the outturn for labour productivity growth and the OBR's one-year ahead forecast. The employment growth forecast error is the difference between actual total hours annual growth and the OBR's forecast based on the number of employees and average hours worked.

Our fiscal forecast

Pressure to end fiscal austerity is high. We expect that the government will find it hard to resist lifting public sector wages to tackle elevated recruitment difficulties (see also Dolton *et al.*, 2018). Extra funding would be needed to stop the fall in public service quality and to respond to population ageing, which will progressively lead to higher demand for public services (see also this *Review*'s Commentary). We therefore deviate from our standard practice of taking official spending plans as given and assume a pick-up in government spending from 2019. In particular, we forecast an annual rate of growth of nominal government consumption some 2 percentage points higher than in the OBR's forecast over the next five years. Figure 10 illustrates that this is due to a larger increase in real spending but also because we expect the cost of public services to rise, in particular public sector pay. As a result, we forecast total managed expenditure to remain stable as a share of GDP over the forecast horizon, just below its

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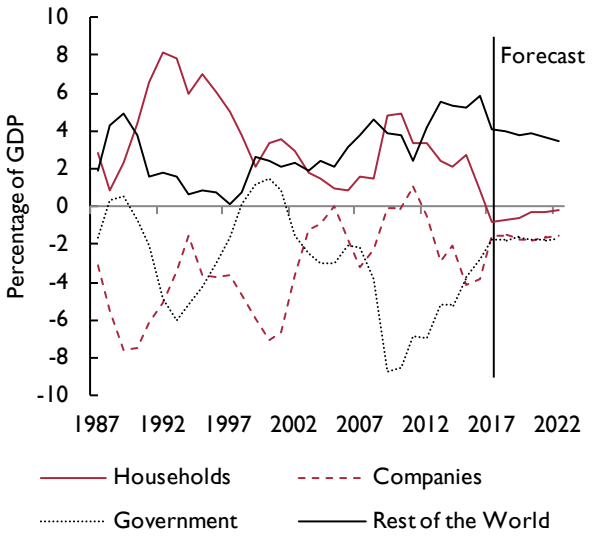
Figure 13. UK sectoral financial balances



Source: NiGEM database and current forecast.

postwar average of 39.3 per cent. Given that we assume no adjustments to the government's taxation plans and no substantial productivity increases in the near term, our fiscal forecast implies that the public sector deficit remains just above 2 per cent of GDP. As a consequence, public sector net debt continues to stay above 85 per cent of GDP (figure 11). This would lead to a breach of the government's current fiscal rules, something that previous governments avoided by changing the rules.

Fiscal risks

The risks around our fiscal forecast are balanced. If the Chancellor were to resist spending pressures, we would have to revise downwards our projections for public spending, deficit and debt. A hard Brexit continues to be a substantial negative risk to public finances. This is because recovering some of the current contributions to the EU budget is unlikely to be enough to offset increasing needs for public sector staff and infrastructure and to respond to the possibility of an economic downturn. An additional unknown is productivity growth, which has very recently surprised to the upside. In this forecast, we assume that this pick-up in output per hour, which is driven by a fall in average hours worked, will be revised away, as was the case in 2011, and have not adjusted our forecast for productivity growth since February. In the past, downward revisions to the OBR's productivity growth forecast were often accompanied by upward revisions to the employment growth forecast (figure 12). The opposite may hold if productivity indeed increases at the expense of employment (measured as total hours worked), leaving the effects on the public purse ambiguous: higher productivity could raise tax revenue but this may be offset by more welfare spending as a result of lower employment.

Saving and investment

Sectoral balance: triple deficit

Table A9 shows the financial position of the private and public sectors of the economy and the resulting balance with the rest of the world. The private sector is further split into a household and a corporate sector. If investment is greater than saving for a sector, then this sector is a net borrower. The aggregation of these three sectors is the current account balance, which, if in deficit, implies that borrowing from the rest of the world is required in order to fund domestic investment plans. It is not possible to infer the optimality of the levels of capital from the current account but rather just the immediate financing needs of the economy. In 2017, all three domestic sectors of the economy – households, companies and government – were in deficit for the first time since at least 1987 (figure 13), and we forecast this pattern to carry on into the medium term.

In the fourth quarter of 2017, household saving remained low, as we had forecast in the last *Review*: saving represented only 3.7 per cent of GDP, about the same level as the average over the whole year. Thus 2017 marked the year of lowest household saving to GDP since 1971. We expect households to continue to favour consuming over saving in 2018 and then gradually to increase saving as a proportion of GDP towards 5 per cent in the medium term as real personal disposable income recovers. An important driver of the increase in saving will be the ongoing auto-enrolment into workplace pensions. Household investment rose steadily from a trough of 2.9 per cent of GDP in 2009 to 4½ per cent of GDP in 2017, reaching the same level as the pre-crisis high of 2006–7. With demand for housing still growing strongly, we project household investment to increase in each subsequent year and to reach 5 per cent of GDP in 2022. The saving and investment positions of the household sector imply that in 2017 households required 0.8 per cent of GDP in funding from the rest of the economy. This represents the first time since at least 1987 that the household sector was a net borrower. With both household saving and investment growing slowly, we expect households to return to a near-balanced net position in the medium term.

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On the corporate side, saving rebounded strongly in 2017, rising to 8½ per cent of GDP from 6½ per cent in 2016. This was driven by an increase in corporate profits both in manufacturing and in the oil and natural gas exploration and extraction sector. We forecast corporate saving to GDP to remain close to 9 per cent in the medium term as the headwinds from Brexit are balanced by stronger international growth. Similarly, corporate investment surprised on the upside reaching 10.3 per cent of GDP in the fourth quarter of 2017, up from a revised 10.1 per cent in the third quarter. Conditional on a 'soft Brexit' assumption, we forecast corporate investment to remain at about 10½ per cent of GDP in the medium term, and therefore the corporate sector still to require about 1½ to 2 per cent of GDP of net financing from the rest of the economy over the same time horizon.

Government sector dis-saving, which reached a peak in 2009 of around 5½ per cent of GDP, has vanished in 2017 as a result of the ongoing fiscal consolidation. We have revised our forecast for government saving down; we now expect saving to be about 1 per cent of GDP from 2018 to 2022, as opposed to increasing to 3 per cent over the same period in our February forecast. This represents a deviation from the OBR forecast and reflects our belief that the government will slow the pace of fiscal consolidation from 2019 onwards. Government investment stayed stable in 2017 at 2½ per cent of GDP and we have maintained our estimate of 2½ to 3 per cent of GDP over the forecast horizon. As a result of reduced saving and constant investment, we now expect the government to remain in a net borrowing position of 1½ to 2 per cent of GDP until 2022, after having borrowed 1.7 per cent in 2017. This is in stark contrast to our previous forecast that assumed a return to balance in 2022.

To finance the triple deficit of the household, corporate and government sectors, the domestic economy had to borrow 4.1 per cent of GDP in 2017 from the rest of the world. This was half a per cent less than previously expected thanks to the vitality of the corporate sector, and the lowest ratio since 2011. With stronger sterling, lower inflation and higher government spending, we now expect the rebalancing of the economy from domestic demand to net trade to grind to a halt. Hence the current account balance is forecast to decline only marginally to 3½ per cent of GDP in 2022, compared to 2½ per cent in our previous forecast.

NOTES

1 The House of Lords examined the EU (Withdrawal) Bill and voted 314 to 217 for a change to keep the UK in the customs union.
2 See speech by Labour party leader Jeremy Corbyn on 26 February available at: https://labour.org.uk/press/jeremy-corbyn-full-speech-britain-brexit/.
3 See Productivity puzzles past and present: NIESR 80th anniversary special session.

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https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Appendix – Forecast details

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]
2012	104.1	1.6	1.2	2617.7	0.8	1.8	1.2	0.5
2013	102.6	1.6	1.2	3006.2	0.5	2.4	0.9	0.5
2014	110.2	1.7	1.2	3136.6	0.5	2.5	0.9	0.5
2015	116.3	1.5	1.4	3150.1	0.6	1.8	0.9	0.5
2016	104.8	1.4	1.2	3102.0	0.5	1.3	0.9	0.3
2017	99.3	1.3	1.1	3542.4	0.4	1.2	1.2	0.4
2018	*103.3*	*1.4*	*1.1*	*3497.5*	*0.8*	*1.6*	*1.5*	*0.8*
2019	*103.9*	*1.4*	*1.1*	*3473.6*	*1.3*	*2.3*	*1.9*	*1.3*
2020	*104.0*	*1.5*	*1.1*	*3508.3*	*1.8*	*2.8*	*2.3*	*1.8*
2021	*104.1*	*1.5*	*1.1*	*3592.5*	*2.2*	*3.2*	*2.6*	*2.1*
2022	*104.2*	*1.5*	*1.1*	*3704.8*	*2.5*	*3.6*	*2.8*	*2.5*
2017 Q1	98.9	1.2	1.2	3467.5	0.4	1.3	1.0	0.3
2017 Q2	100.0	1.3	1.2	3549.2	0.3	1.0	1.1	0.3
2017 Q3	98.3	1.3	1.1	3548.3	0.3	1.2	1.2	0.3
2017 Q4	100.1	1.3	1.1	3604.5	0.5	1.3	1.3	0.4
2018 Q1	102.0	1.4	1.1	3552.5	0.6	1.5	1.4	0.5
2018 Q2	*103.8*	*1.4*	*1.2*	*3456.4*	*0.7*	*1.4*	*1.5*	*0.5*
2018 Q3	*103.8*	*1.4*	*1.2*	*3478.6*	*0.8*	*1.6*	*1.6*	*0.7*
2018 Q4	*103.8*	*1.4*	*1.2*	*3502.5*	*0.9*	*1.8*	*1.7*	*0.8*
2019 Q1	*103.9*	*1.4*	*1.2*	*3487.4*	*1.1*	*2.0*	*1.7*	*0.9*
2019 Q2	*103.9*	*1.4*	*1.1*	*3470.3*	*1.2*	*2.2*	*1.8*	*1.0*
2019 Q3	*103.9*	*1.4*	*1.1*	*3465.1*	*1.3*	*2.3*	*1.9*	*1.2*
2019 Q4	*104.0*	*1.4*	*1.1*	*3471.7*	*1.4*	*2.5*	*2.1*	*1.3*
Percentage changes								
2012/2011	4.2	–1.1	7.0	1.2				
2013/2012	–1.5	–1.3	–4.5	14.8				
2014/2013	7.4	5.3	5.4	4.3				
2015/2014	5.6	–7.2	11.1	0.4				
2016/2015	–9.9	–11.4	–11.2	–1.5				
2017/2016	–5.2	–4.9	–6.7	14.2				
2018/2017	*4.1*	*9.4*	*0.1*	*–1.3*				
2019/2018	*0.6*	*1.4*	*–0.2*	*–0.7*				
2020/2019	*0.1*	*1.6*	*–1.0*	*1.0*				
2021/2020	*0.1*	*1.5*	*–1.1*	*2.4*				
2022/2021	*0.0*	*1.4*	*–1.1*	*3.1*				
2017Q4/2016Q1	2.0	6.9	–2.1	9.2				
2018Q4/2017Q1	*3.7*	*6.8*	*1.7*	*–2.8*				
2019Q4/2018Q1	*0.2*	*1.5*	*–0.9*	*–0.9*				

Notes: We assume that bilateral exchange rates for the first quarter of this year are the average of information available to 12 January 2018. 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.

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Table A2. Price indices *2015=100*

	Unit labour costs	Imports deflator	Exports deflator	World oil price ($)[a]	Consump–tion deflator	GDP deflator (market prices)	Retail price index	Consumer prices index
2012	98.3	110.1	105.3	112.5	95.3	96.0	93.9	96.1
2013	100.2	111.0	108.3	109.1	97.5	97.9	96.7	98.5
2014	99.3	106.3	105.3	99.6	99.4	99.5	99.0	99.9
2015	100.0	100.0	100.0	52.8	100.0	100.0	100.0	100.0
2016	102.2	103.3	104.8	43.4	101.4	102.0	101.7	100.7
2017	104.5	109.4	111.3	53.5	103.4	104.0	105.4	103.4
2018	*106.9*	*111.2*	*109.8*	*64.8*	*105.6*	*105.3*	*109.5*	*105.9*
2019	*109.9*	*112.9*	*111.9*	*67.6*	*108.1*	*107.9*	*113.8*	*108.1*
2020	*112.5*	*114.4*	*114.0*	*70.5*	*110.5*	*110.6*	*117.8*	*110.2*
2021	*114.7*	*116.3*	*116.1*	*70.7*	*112.9*	*113.2*	*122.0*	*112.4*
2022	*116.6*	*118.8*	*118.6*	*71.0*	*115.5*	*115.8*	*126.1*	*114.7*
Percentage changes								
2012/2011	0.8	–0.7	0.2	1.8	2.1	1.6	3.2	2.9
2013/2012	1.9	0.8	2.9	–3.0	2.4	1.9	3.0	2.6
2014/2013	–0.9	–4.2	–2.7	–8.7	1.9	1.7	2.4	1.4
2015/2014	0.7	–5.9	–5.1	–47.0	0.6	0.5	1.0	0.1
2016/2015	2.2	3.3	4.8	–17.7	1.4	2.0	1.7	0.7
2017/2016	2.3	5.9	6.2	23.3	2.0	2.0	3.6	2.7
2018/2017	*2.3*	*1.6*	*–1.3*	*21.0*	*2.2*	*1.2*	*3.9*	*2.4*
2019/2018	*2.7*	*1.6*	*1.9*	*4.4*	*2.4*	*2.5*	*3.9*	*2.1*
2020/2019	*2.4*	*1.3*	*1.8*	*4.2*	*2.2*	*2.4*	*3.5*	*2.0*
2021/2020	*2.0*	*1.7*	*1.9*	*0.4*	*2.2*	*2.3*	*3.6*	*2.0*
2022/2021	*1.6*	*2.2*	*2.1*	*0.4*	*2.3*	*2.3*	*3.4*	*2.0*

Notes: (a) Per barrel, average of Dubai and Brent spot prices.

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Table A3. Gross domestic product and components of expenditure *£ billion, 2015 prices*

	Final consumption expenditure		Gross capital formation		Domestic demand	Total exports[c]	Total final expendi–ture	Total imports[c]	Net trade	GDP at market prices
	Households & NPISH[a]	General govt.	Gross fixed in–vestment	Changes in inventories[b]						
2012	1162.4	350.4	275.2	–0.4	1761.7	475.9	2238.0	485.2	–9.3	1754.7
2013	1182.5	351.1	284.6	3.0	1810.0	479.9	2289.8	500.5	–20.5	1790.8
2014	1207.6	359.9	304.7	5.5	1875.4	492.7	2367.5	522.8	–30.1	1845.4
2015	1238.5	362.1	313.2	7.4	1921.1	517.2	2438.3	549.5	–32.4	1888.7
2016	1274.9	365.1	318.8	4.8	1963.6	529.2	2492.8	576.1	–46.9	1925.3
2017	1296.0	365.6	331.7	–2.8	1990.5	559.1	2549.6	594.6	–35.5	1959.7
2018	*1310.0*	*369.4*	*337.4*	*1.5*	*2018.2*	*573.0*	*2591.2*	*606.6*	*–33.6*	*1987.5*
2019	*1331.0*	*374.6*	*348.6*	*1.5*	*2055.6*	*590.0*	*2645.7*	*624.7*	*–34.7*	*2021.0*
2020	*1350.8*	*383.1*	*361.4*	*1.5*	*2096.8*	*607.7*	*2704.5*	*648.1*	*–40.4*	*2056.4*
2021	*1370.9*	*393.3*	*370.3*	*1.5*	*2136.1*	*625.8*	*2761.9*	*671.1*	*–45.3*	*2090.8*
2022	*1390.0*	*404.5*	*378.3*	*1.5*	*2174.2*	*644.2*	*2818.5*	*691.7*	*–47.4*	*2126.8*
Percentage changes										
2012/2011	1.6	1.3	2.1		2.3	0.2	1.8	2.7		1.5
2013/2012	1.7	0.2	3.4		2.7	0.8	2.3	3.1		2.1
2014/2013	2.1	2.5	7.1		3.6	2.7	3.4	4.5		3.1
2015/2014	2.6	0.6	2.8		2.4	5.0	3.0	5.1		2.3
2016/2015	2.9	0.8	1.8		2.2	2.3	2.2	4.8		1.9
2017/2016	1.7	0.1	4.0		1.4	5.7	2.3	3.2		1.8
2018/2017	*1.1*	*1.0*	*1.7*		*1.4*	*2.5*	*1.6*	*2.0*		*1.4*
2019/2018	*1.6*	*1.4*	*3.3*		*1.9*	*3.0*	*2.1*	*3.0*		*1.7*
2020/2019	*1.5*	*2.3*	*3.7*		*2.0*	*3.0*	*2.2*	*3.7*		*1.8*
2021/2020	*1.5*	*2.7*	*2.5*		*1.9*	*3.0*	*2.1*	*3.5*		*1.7*
2022/2021	*1.4*	*2.8*	*2.1*		*1.8*	*2.9*	*2.0*	*3.1*		*1.7*
Decomposition of growth in GDP										
2012	1.1	0.3	0.3	0.2	2.2	0.1	2.3	–0.8	–0.7	1.5
2013	1.1	0.0	0.5	0.2	2.8	0.3	3.0	–0.9	–0.6	2.1
2014	1.4	0.5	1.1	0.1	3.6	0.8	4.3	–1.3	–0.5	3.1
2015	1.7	0.1	0.5	0.1	2.5	1.3	3.8	–1.5	–0.1	2.3
2016	1.9	0.2	0.3	–0.1	2.2	0.6	2.9	–1.4	–0.8	1.9
2017	1.0	0.1	0.5	–0.4	1.2	1.6	2.8	–0.9	0.7	1.8
2018	*0.8*	*0.2*	*0.4*	*0.0*	*1.4*	*1.1*	*2.6*	*–0.7*	*0.5*	*1.9*
2019	*0.7*	*0.1*	*0.6*	*0.0*	*1.5*	*1.1*	*2.5*	*–0.7*	*0.4*	*1.9*
2020	*0.8*	*0.1*	*0.6*	*0.0*	*1.6*	*0.9*	*2.5*	*–0.8*	*0.1*	*1.7*
2021	*0.9*	*0.2*	*0.5*	*0.0*	*1.6*	*0.9*	*2.5*	*–0.9*	*0.1*	*1.6*
2022	*0.9*	*0.2*	*0.4*	*0.0*	*1.5*	*0.9*	*2.3*	*–0.7*	*0.2*	*1.6*

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

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Table A4. External sector

	Exports of goods[a]	Imports of goods[a]	Net trade in goods[a]	Exports of services	Imports of services	Net trade in services	Export price competitive–ness[c]	World trade[d]	Terms of trade[e]	Current balance
	£ billion, 2015 prices[b]						2015=100			% of GDP
2012	266.9	365.6	–98.7	208.5	119.3	89.2	96.4	88.8	95.6	–4.2
2013	264.1	375.3	–111.2	216.2	125.0	91.2	97.2	91.2	97.6	–5.5
2014	272.9	392.0	–119.1	220.0	130.7	89.3	100.5	95.4	99.1	–5.3
2015	288.8	407.4	–118.6	228.4	142.1	86.3	100.0	100.0	100.0	–5.2
2016	286.2	425.7	–139.4	242.9	150.4	92.5	95.9	103.8	101.4	–5.8
2017	306.6	439.9	–133.3	252.5	154.7	97.8	93.2	107.4	101.7	–4.1
2018	*319.7*	*448.8*	*–129.2*	*253.3*	*157.7*	*95.6*	*93.2*	*112.9*	*98.7*	*–4.0*
2019	*339.2*	*465.5*	*–126.3*	*250.9*	*159.2*	*91.7*	*92.3*	*118.2*	*99.1*	*–3.8*
2020	*354.3*	*485.4*	*–131.2*	*253.4*	*162.7*	*90.8*	*91.8*	*123.0*	*99.6*	*–3.9*
2021	*367.6*	*504.6*	*–137.0*	*258.3*	*166.5*	*91.7*	*91.3*	*127.5*	*99.8*	*–3.7*
2022	*379.8*	*521.3*	*–141.4*	*264.4*	*170.4*	*94.0*	*90.9*	*131.8*	*99.8*	*–3.4*
Percentage changes										
2012/2011	–1.7	2.4		3.3	4.0		1.6	1.6	0.9	
2013/2012	–1.0	2.7		3.7	4.8		0.8	2.8	2.1	
2014/2013	3.3	4.4		1.7	4.5		3.4	4.6	1.5	
2015/2014	5.8	3.9		3.8	8.8		–0.5	4.8	0.9	
2016/2015	–0.9	4.5		6.4	5.8		–4.1	3.8	1.4	
2017/2016	7.1	3.3		3.9	2.9		–2.8	3.5	0.3	
2018/2017	*4.2*	*2.0*		*0.3*	*1.9*		*0.0*	*5.1*	*–2.9*	
2019/2018	*6.1*	*3.7*		*–1.0*	*0.9*		*–0.9*	*4.8*	*0.4*	
2020/2019	*4.5*	*4.3*		*1.0*	*2.2*		*–0.6*	*4.1*	*0.5*	
2021/2020	*3.7*	*3.9*		*1.9*	*2.4*		*–0.6*	*3.6*	*0.2*	
2022/2021	*3.3*	*3.3*		*2.4*	*2.3*		*–0.4*	*3.4*	*–0.1*	

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

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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]
	2015=100	£ billion, current prices			£ billion, 2015 prices		per cent		
2012	96.0	849.4	1484.0	1166.3	1224.2	1162.4	9.3	87.6	6.3
2013	98.7	883.5	1535.1	1208.2	1238.9	1182.5	8.6	89.9	6.2
2014	99.0	902.3	1577.9	1243.5	1250.8	1207.6	8.4	97.1	6.7
2015	100.0	930.2	1669.0	1317.3	1317.2	1238.5	9.2	102.9	6.8
2016	103.2	968.9	1707.1	1338.4	1320.5	1274.9	7.1	110.1	7.3
2017	106.2	1008.6	1756.8	1367.9	1323.3	1296.0	5.1	115.2	7.4
2018	*109.1*	*1046.8*	*1823.2*	*1417.7*	*1342.5*	*1310.0*	*5.5*	*120.4*	*7.2*
2019	*112.5*	*1093.5*	*1901.5*	*1477.3*	*1366.7*	*1331.0*	*5.8*	*123.4*	*7.0*
2020	*116.2*	*1139.1*	*1984.5*	*1540.5*	*1394.4*	*1350.8*	*6.3*	*124.8*	*6.8*
2021	*120.0*	*1181.3*	*2068.1*	*1603.7*	*1420.2*	*1370.9*	*6.6*	*125.7*	*6.7*
2022	*123.8*	*1221.1*	*2150.6*	*1666.4*	*1443.1*	*1390.0*	*6.8*	*126.2*	*6.6*
Percentage changes									
2012/2011	1.9	2.3	3.8	4.9	2.7	1.6		0.4	
2013/2012	2.8	4.0	3.4	3.6	1.2	1.7		2.6	
2014/2013	0.4	2.1	2.8	2.9	1.0	2.1		8.0	
2015/2014	1.0	3.1	5.8	5.9	5.3	2.6		6.0	
2016/2015	3.2	4.2	2.3	1.6	0.2	2.9		7.0	
2017/2016	2.9	4.1	2.9	2.2	0.2	1.7		4.7	
2018/2017	*2.7*	*3.8*	*3.8*	*3.6*	*1.5*	*1.1*		*4.5*	
2019/2018	*3.1*	*4.5*	*4.3*	*4.2*	*1.8*	*1.6*		*2.5*	
2020/2019	*3.3*	*4.2*	*4.4*	*4.3*	*2.0*	*1.5*		*1.2*	
2021/2020	*3.2*	*3.7*	*4.2*	*4.1*	*1.8*	*1.5*		*0.7*	
2022/2021	*3.2*	*3.4*	*4.0*	*3.9*	*1.6*	*1.4*		*0.4*	

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.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Table A6. Fixed investment and capital *£ billion, 2015 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]
2012	160.0	58.5	56.7	275.2	13.1	24.0	3226.1	1002.4
2013	164.8	65.2	54.7	284.6	12.2	24.0	3176.9	1009.2
2014	173.2	71.5	60.0	304.7	12.2	25.1	3216.2	1051.4
2015	179.7	75.0	58.5	313.2	11.0	24.5	3251.6	1066.4
2016	178.8	80.7	59.3	318.8	10.8	24.2	3304.7	1078.8
2017	183.2	86.8	61.6	331.7	11.9	24.2	3349.6	1108.2
2018	*187.1*	*88.3*	*61.9*	*337.4*	*12.2*	*24.5*	*3396.8*	*1137.5*
2019	*193.2*	*92.1*	*63.2*	*348.6*	*12.7*	*25.2*	*3450.6*	*1167.0*
2020	*198.3*	*96.0*	*67.1*	*361.4*	*12.8*	*26.1*	*3509.5*	*1199.6*
2021	*202.7*	*99.9*	*67.8*	*370.3*	*13.0*	*26.7*	*3572.6*	*1233.7*
2022	*205.9*	*103.8*	*68.6*	*378.3*	*13.1*	*27.3*	*3638.6*	*1269.3*
Percentage changes								
2012/2011	7.3	–1.6	–7.6	2.1	–3.4	–1.0	0.7	0.4
2013/2012	3.0	11.4	–3.6	3.4	–6.8	0.0	–1.5	0.7
2014/2013	5.1	9.7	9.8	7.1	–0.2	4.6	1.2	4.2
2015/2014	3.7	4.9	–2.6	2.8	–9.8	–2.4	1.1	1.4
2016/2015	–0.5	7.6	1.3	1.8	–1.8	–1.3	1.6	1.2
2017/2016	2.4	7.6	4.0	4.0	10.4	0.0	1.4	2.7
2018/2017	*2.1*	*1.7*	*0.5*	*1.7*	*2.1*	*1.2*	*1.4*	*2.6*
2019/2018	*3.3*	*4.2*	*2.1*	*3.3*	*3.9*	*3.0*	*1.6*	*2.6*
2020/2019	*2.6*	*4.2*	*6.1*	*3.7*	*0.8*	*3.3*	*1.7*	*2.8*
2021/2020	*2.2*	*4.1*	*1.1*	*2.5*	*1.8*	*2.6*	*1.8*	*2.8*
2022/2021	*1.6*	*3.9*	*1.2*	*2.1*	*1.0*	*2.1*	*1.8*	*2.9*

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

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

Table A7. Productivity and the labour market *Thousands*

	Employment		ILO unemploy–ment	Labour force[b]	Population of working age[c]	Productivity (2015=100)		ILO unemployment rate
	Employees	Total[a]				Per hour	Manufacturing	
2012	25213	29697	2572	32269	40507	98.7	100.3	8.0
2013	25515	30045	2474	32519	40552	98.3	100.0	7.6
2014	25962	30755	2026	32781	40683	99.1	100.8	6.2
2015	26505	31284	1781	33064	40873	100.0	100.0	5.4
2016	26760	31727	1633	33360	41031	100.3	100.6	4.9
2017	27068	32057	1480	33537	41156	101.0	102.2	4.4
2018	*27341*	*32326*	*1396*	*33721*	*41275*	*101.8*	*106.8*	*4.1*
2019	*27694*	*32470*	*1413*	*33883*	*41396*	*103.0*	*112.3*	*4.2*
2020	*27930*	*32535*	*1514*	*34050*	*41517*	*104.5*	*116.9*	*4.4*
2021	*28057*	*32613*	*1604*	*34216*	*41638*	*106.0*	*121.2*	*4.7*
2022	*28102*	*32758*	*1626*	*34383*	*41760*	*107.3*	*125.1*	*4.7*
Percentage changes								
2012/2011	0.4	1.1	–0.8	0.9	–0.1	–0.7	–2.2	
2013/2012	1.2	1.2	–3.8	0.8	0.1	–0.4	–0.4	
2014/2013	1.7	2.4	–18.1	0.8	0.3	0.7	0.9	
2015/2014	2.1	1.7	–12.1	0.9	0.5	1.0	–0.8	
2016/2015	1.0	1.4	–8.3	0.9	0.4	0.3	0.6	
2017/2016	1.2	1.0	–9.4	0.5	0.3	0.6	1.5	
2018/2017	*1.0*	*0.8*	*–5.7*	*0.6*	*0.3*	*0.8*	*4.6*	
2019/2018	*1.3*	*0.4*	*1.2*	*0.5*	*0.3*	*1.2*	*5.1*	
2020/2019	*0.9*	*0.2*	*7.2*	*0.5*	*0.3*	*1.5*	*4.2*	
2021/2020	*0.5*	*0.2*	*5.9*	*0.5*	*0.3*	*1.4*	*3.6*	
2022/2021	*0.2*	*0.4*	*1.3*	*0.5*	*0.3*	*1.3*	*3.2*	

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 2014–based population projections by the ONS.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

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

		2014–15	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
Current receipts:	Taxes on income	385.3	400.7	430.4	447.6	471.1	494.1	515.3	540.4
	Taxes on expenditure	232.3	242.6	251.5	260.6	271.1	283.2	293.7	304.6
	Other current receipts	37.8	36.2	37.0	36.1	34.2	33.8	35.3	36.7
	Total	655.4	679.5	719.0	743.2	768.0	805.7	838.5	875.7
	(as a % of GDP)	35.4	35.7	36.2	36.3	36.3	36.5	36.5	36.6
Current expenditure:	Goods and services	359.6	363.9	371.3	376.6	385.9	399.7	417.4	437.5
	Net social benefits paid	230.6	232.8	233.7	235.7	232.9	237.9	246.8	256.4
	Debt interest	37.0	38.3	40.4	44.7	45.6	48.1	50.8	53.9
	Other current expenditure	50.2	49.4	49.6	52.3	57.4	68.0	70.7	73.0
	Total	677.3	684.3	694.9	709.2	721.7	753.7	785.7	820.8
	(as a % of GDP)	36.6	35.9	35.0	34.6	34.1	34.2	34.2	34.3
Depreciation		39.0	40.1	40.8	40.9	40.9	42.2	43.5	44.9
Surplus on public sector current budget[a]		–61.0	–44.9	–16.7	–7.0	5.4	9.8	9.4	10.0
(as a % of GDP)		–3.3	–2.4	–0.9	–0.3	0.3	0.4	0.4	0.4
Gross investment		76.0	75.0	79.9	89.0	95.3	100.8	109.1	110.6
Net investment		37.0	34.9	39.1	48.0	54.4	58.6	65.7	65.7
(as a % of GDP)		2.0	1.8	2.0	2.3	2.6	2.7	2.9	2.7
Total managed expenditure		753.3	759.3	774.8	798.2	817.0	854.5	894.8	931.4
(as a % of GDP)		40.7	39.9	39.0	39.0	38.7	38.8	39.0	39.0
Public sector net borrowing		97.9	79.8	55.9	55.0	48.9	48.8	56.3	55.6
(as a % of GDP)		5.3	4.2	2.8	2.7	2.3	2.2	2.5	2.3
Financial transactions		4.9	15.9	–65.0	–75.4	–6.3	–10.5	31.2	51.3
Public sector net cash requirement		93.0	63.9	120.8	130.4	55.2	59.3	25.1	4.3
(as a % of GDP)		5.0	3.4	6.1	6.4	2.6	2.7	1.1	0.2
Public sector net debt (% of GDP)		83.3	83.1	85.7	87.9	88.2	88.4	87.2	85.1
GDP deflator at market prices (2015=100)		99.7	100.4	102.6	104.2	105.9	108.6	111.2	113.8
Money GDP		1852.1	1904.6	1985.0	2048.6	2113.8	2204.7	2297.2	2389.7
Financial balance under Maastricht (% of GDP)[b]		–5.4	–4.2	–3.0	–1.9	–4.0	–3.8	–4.0	–4.0
Gross debt under Maastricht (% of GDP)[b]		87.4	88.2	88.2	86.0	86.1	84.6	83.5	82.4

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) Calendar year.

https://doi.org/10.1177/002795011824400104 Published online by Cambridge University Press

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
2012	6.7	3.4	9.2	9.7	–4.4	2.6	11.5	15.7	4.2	1.0	–0.8
2013	6.2	3.8	7.2	10.1	–2.7	2.5	10.8	16.3	5.5	2.0	–1.5
2014	6.0	3.9	8.4	10.5	–2.6	2.6	11.8	17.1	5.3	2.0	–0.4
2015	6.6	3.9	6.4	10.5	–1.2	2.5	11.8	17.0	5.2	2.2	–0.5
2016	5.0	4.2	6.5	10.3	–0.4	2.5	11.2	17.0	5.8	2.5	–1.1
2017	3.6	4.4	8.6	10.1	0.8	2.5	13.0	17.0	4.1	1.6	0.7
2018	*3.9*	*4.5*	*8.9*	*10.4*	*0.8*	*2.6*	*13.5*	*17.4*	*4.0*	*0.7*	*1.3*
2019	*4.0*	*4.6*	*8.8*	*10.5*	*1.0*	*2.6*	*13.9*	*17.7*	*3.8*	*0.6*	*1.7*
2020	*4.4*	*4.7*	*8.9*	*10.6*	*1.0*	*2.8*	*14.3*	*18.1*	*3.9*	*0.6*	*2.0*
2021	*4.6*	*4.9*	*9.0*	*10.6*	*1.0*	*2.8*	*14.6*	*18.3*	*3.7*	*0.3*	*2.4*
2022	*4.8*	*5.0*	*9.2*	*10.6*	*1.0*	*2.7*	*14.9*	*18.4*	*3.4*	*0.0*	*2.7*

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

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

	2014	2015	2016	2017	*2018*	*2019*	*2020*	*2021*	*2022*	*2023–27*
GDP (market prices)	3.1	2.3	1.9	1.8	*1.4*	*1.7*	*1.8*	*1.7*	*1.7*	*1.6*
Average earnings	0.4	1.0	3.2	2.9	*2.7*	*3.1*	*3.3*	*3.2*	*3.2*	*3.3*
GDP deflator (market prices)	1.7	0.5	2.0	2.0	*1.2*	*2.5*	*2.4*	*2.3*	*2.3*	*2.4*
Consumer Prices Index	1.4	0.1	0.7	2.7	*2.4*	*2.1*	*2.0*	*2.0*	*2.0*	*2.1*
Per capita GDP	2.3	1.6	1.1	1.2	*0.8*	*1.1*	*1.2*	*1.1*	*1.2*	*1.1*
Whole economy productivity[a]	0.7	1.0	0.3	0.6	*0.8*	*1.2*	*1.5*	*1.4*	*1.3*	*1.2*
Labour input[b]	2.8	1.5	1.4	1.2	*0.6*	*0.5*	*0.2*	*0.3*	*0.5*	*0.4*
ILO unemployment rate (%)	6.2	5.4	4.9	4.4	*4.1*	*4.2*	*4.4*	*4.7*	*4.7*	*4.9*
Current account (% of GDP)	–5.3	–5.2	–5.8	–4.1	*–4.0*	*–3.8*	*–3.9*	*–3.7*	*–3.4*	*–3.0*
Total managed expenditure (% of GDP)	41.0	40.0	39.2	38.8	*38.8*	*38.7*	*38.9*	*39.0*	*39.0*	*39.5*
Public sector net borrowing (% of GDP)	5.8	4.4	3.4	2.4	*2.5*	*2.2*	*2.4*	*2.4*	*2.3*	*2.3*
Public sector net debt (% of GDP)	82.2	83.8	83.6	86.3	*88.1*	*88.3*	*87.9*	*86.4*	*85.6*	*88.8*
Effective exchange rate (2011=100)	110.2	116.3	104.8	99.3	*103.3*	*103.9*	*104.0*	*104.1*	*104.2*	*103.9*
Bank Rate (%)	0.5	0.5	0.4	0.3	*0.6*	*1.1*	*1.6*	*2.0*	*2.3*	*3.5*
3 month interest rates (%)	0.5	0.6	0.5	0.4	*0.8*	*1.3*	*1.8*	*2.2*	*2.5*	*3.7*
10 year interest rates (%)	2.5	1.8	1.3	1.2	*1.6*	*2.3*	*2.8*	*3.2*	*3.6*	*4.1*

Notes: (a) Per hour.

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