



Brussels, 7.3.2018
SWD(2018) 226 final

COMMISSION STAFF WORKING DOCUMENT

Country Report United Kingdom 2018

Accompanying the document

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN CENTRAL BANK AND THE
EUROGROUP**

**2018 European Semester: Assessment of progress on structural reforms, prevention and
correction of macroeconomic imbalances, and results of in-depth reviews under
Regulation (EU) No 1176/2011**

{COM(2018) 120 final}

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EXECUTIVE SUMMARY

The UK has scope to raise stagnant productivity by increasing both public and private investment. Unemployment is at a record low and the UK has many strengths. However, productivity is weak due to deep-rooted policy challenges including low investment and skills gaps. The UK could boost potential growth through more radical action to enable sufficient housebuilding in areas of high demand and by delivering on its objectives to raise the quality of technical education and to upgrade transport networks ⁽¹⁾.

Growth is expected to be subdued in 2018 and 2019. The slight slowdown in growth to 1.8 % in 2017 was driven primarily by private consumption, as higher consumer price inflation squeezed real household incomes. The uncertainty around Brexit continues to weigh on business investment, while the depreciation of sterling in 2016 has produced only a modest boost to net exports. Based on a purely technical assumption of the status quo in terms of trading relations between the UK and the rest of the EU, growth is expected to slow further to 1.4 % in 2018 and 1.1 % in 2019. Private consumption and business investment are projected to remain subdued, with net export growth easing off, in line with developments in export markets. Risks to the baseline forecast are large and predominantly to the downside.

Consumer prices rose sharply in 2017 following the 2016 depreciation of sterling. The Harmonised Index of Consumer Prices measure of inflation reached 3.0 % in December 2017, and inflation is significantly above the Bank of England's target. Inflation is expected to remain elevated in 2018, before easing in 2019.

The headline labour market picture is positive. The employment rate (20-64) remained at a record level of 78.2 % in Q3-2017, while at 4.2 % unemployment is at its lowest level since 1975.

The large current account deficit continues to pose external financing risks. The current account deficit widened to a record 5.9 % of GDP in 2016, and remains elevated. However, the composition of the deficit tempers risks associated with sizeable external financing needs. The UK's Net International Investment Position has improved due to valuation effects linked to the fall in sterling. However, to date the net trade response to weaker sterling has been disappointing. A persistently big deficit in trade in goods is offset largely but not fully by net service exports.

Private-sector debt remains high, and consumer credit growth has been elevated since early 2016. Following the financial crisis, UK banks have reduced debt and strengthened their balance sheets. The level of non-performing loans is quite low, although bank profitability remains weak. Lending to non-financial firms grew modestly in 2017, as did lending to households that is secured on dwellings. Consumer credit grew more rapidly, alongside a fall in the household saving ratio. Although household debt remains high, debt service costs currently remain low. Signs of a moderation in house price growth should slow the growth of mortgage debt.

Overall, the UK has made some progress in addressing the 2017 country-specific recommendations. There has been some progress on housing investment. The government is implementing a range of policies to boost housing supply. It announced further measures in the 2017 Autumn Budget, including additional moves to make the planning system more supportive of residential development. The upward trend in annual housing completions continued in 2017, although new supply continues to fall short of estimated housing need and many barriers to housebuilding remain. There has been some progress on skills and apprenticeships. The number of apprenticeship starts apparently dropped in the second half of 2017, coinciding with the introduction of the apprenticeship levy. The quality of apprenticeships (measured by the level of qualification) appears to be improving, albeit from a low base. Other routes for progression in work are at a very early stage but backed by a clear political impetus. It is important that the ambitious intentions and plans are swiftly implemented.

⁽¹⁾ This report assesses the UK's economy in the light of the European Commission's Annual Growth Survey published on 22 November 2017. In the survey, the Commission calls on EU Member States to implement reforms to make the European economy more productive, resilient and inclusive. In so doing, Member States should focus their efforts on the three elements of the virtuous triangle of economic policy — boosting investment, pursuing structural reforms and ensuring responsible fiscal policies.

Regarding progress in reaching the national targets under the Europe 2020 strategy, the UK is performing well on greenhouse gas emissions. It has made good progress on renewable energy and energy efficiency. However, the UK faces challenges in achieving the 2020 targets.

The UK performs adequately on the indicators of the Social Scoreboard supporting the European Pillar of Social Rights. The post-crisis economic recovery has translated into a significant improvement in employment outcomes, bringing a large number of people back into the labour market and employment. However, there is untapped potential with high inactivity rates among certain groups. Many women work part time. Projections suggest that recent social reforms risk increasing in-work poverty and poverty among children.

Key structural issues analysed in this report, which point to particular challenges for the UK, are:

- **High general government debt is a source of vulnerability.** The deficit fell to 2.3 % in 2016-2017, although deficit reduction is expected to stall temporarily in 2017-2018. The debt-to-GDP ratio is expected to remain above 80 % and could increase if potential shocks to the economy materialise. The UK faces medium fiscal risks in the long term, linked to the projected impact of age-related spending on pensions, health and long term care.
- **Housing costs are high and housing supply still lags growth in demand.** While house price growth has slowed in recent quarters, affordability has continued to decline due to low wage growth. Home ownership has fallen significantly among younger age cohorts in recent years, increasing intergenerational inequality. A cyclical recovery and government policy reforms have contributed to a continued pick up in residential construction. However, new housing supply remains insufficient, particularly in areas of high demand. The government recognises the problem and has set ambitious objectives to increase supply in the coming years. At the same time, the government has reaffirmed its commitment to limiting development around urban centres.
- **Labour market entry is easy for most people, but progression is difficult for some.** Youth and long term unemployment are low and stable. However, some cohorts have a higher propensity to be stuck in low-wage, low-hours and/or low-progression jobs. Many new skills initiatives are targeting the flow of new entrants to the labour market, but a large share of the current work force is either low-skilled or in jobs not matching their qualifications. Apprenticeship reform is underway but more focused on quantity targets rather than quality. Other upskilling and reskilling opportunities require strengthening. The National Retraining Scheme to reskill and upskill those who already have completed full-time education, including those in work, could improve their future prospects but is yet to be implemented.
- **There are care- and poverty-related challenges for working-age families.** Pressures on childcare and social care supply can affect female full-time employment. Other social policy outcomes, particularly for working-age families who receive in-work benefits, will be hit by previously announced cutbacks and reforms now being implemented in a context of heightened inflation.
- **Productivity is low and stagnant, due partly to low investment.** The UK is an open economy with a high employment rate and many positive aspects to its business environment. However, labour productivity is significantly lower than in other developed economies, and no higher than it was a decade ago. Large parts of the economy perform comparatively poorly on the main drivers of productivity — skills, investment and the adoption and implementation of efficient business processes. Private investment remains well below the EU average, particularly in equipment, and there remain impediments to the efficient allocation of capital and labour.
- **The UK has a significant challenge to deliver a modern network infrastructure that can meet future demand.** The UK's road, rail and aviation networks have significant and growing capacity pressures. There is also an increasingly urgent need for higher investment

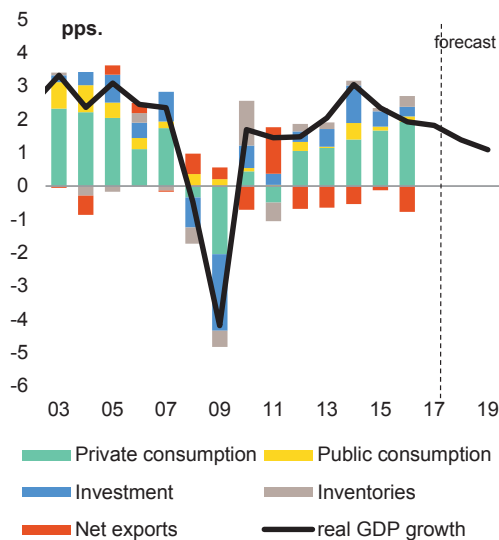
in new energy generation and supply capacity. The government has created two agencies to provide a more stable and long-term framework for infrastructure investment and is increasing public infrastructure investment. Annual investment from the public and private sector needs to grow substantially over the next decade to deliver all the projects planned.

1. ECONOMIC SITUATION AND OUTLOOK

GDP growth and its composition

The pace of quarterly economic growth in the UK has slowed since the start of 2017. Annual GDP growth had already slowed from 2.3 % in 2015 to 1.9 % in 2016 (Graph 1.1). Since the start of 2017, the pace of quarterly growth slowed significantly, from 0.7 % quarter-on-quarter in Q4-2016 to an average of 0.4 % in 2017.

Graph 1.1: Real GDP growth



Source: Office for National Statistics & European Commission

This slowdown in growth has been driven primarily by a decline in private consumption growth, which fell to an average of 0.2 % quarter-on-quarter in the first three quarters of 2017. This was mainly due to the squeeze on real disposable incomes as nominal wage growth fell below consumer price inflation (Graph 1.2). Consumer prices have risen sharply in 2017 following the 2016 depreciation of sterling.

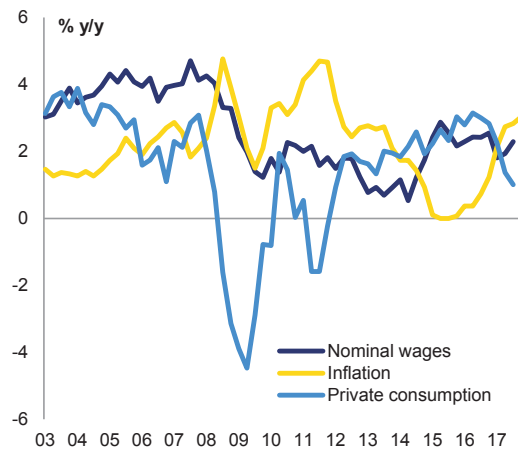
Households have to date smoothed consumption by reducing their savings. The headline (national accounts) households saving ratio⁽²⁾ fell from 8.2 % (of disposable income) in Q1-2016 to a near record low of 5.2 % in Q3-2017 (Graph 1.3). When measured on a cash basis⁽³⁾ the households saving ratio recovered to a modest 1.4 % in Q3-

⁽²⁾ Excluding non-profit institutions serving households.

⁽³⁾ This removes imputed transactions resulting in a measure of gross saving that reflects households' saving (excluding pension contributions) in the respective quarter or year.

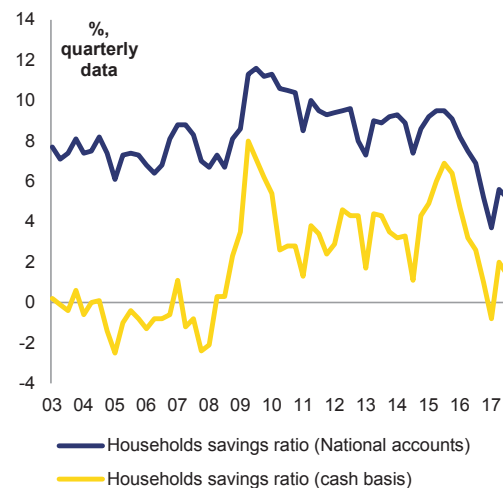
2017 from a negative 0.8 % in Q1-2017. This indicates that households spent more than they earned in income during Q1-2017.

Graph 1.2: Private consumption and wages



Source: Office for National Statistics

Graph 1.3: Real households saving ratio



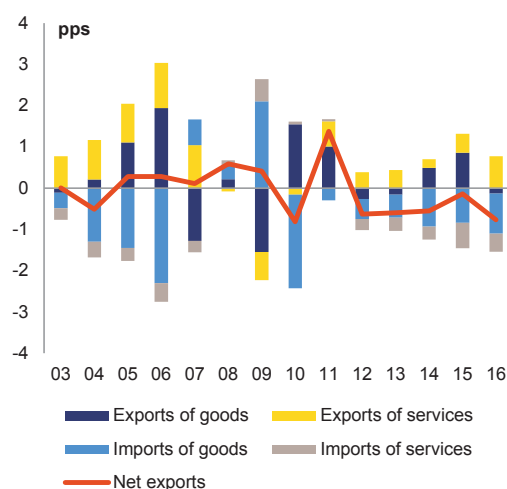
Source: Office for National Statistics

Private consumption growth is expected to remain subdued over the 2018-2019 forecast horizon. In 2018, modest growth in nominal wages is projected to be outpaced by elevated consumer price inflation. Nonetheless, households are expected to smooth consumption by continuing to reduce savings in 2018. In 2019, despite lower projected inflation, private consumption growth is

expected to be constrained by a marginal rebound in the households saving ratio.

The impact of the depreciation of sterling in 2016 and buoyant external demand has provided a boost to net exports. Net exports actually made a negative 0.8 pps. contribution to GDP growth in 2016 (Graph 1.4). Service exports provided the only positive contribution to net trade in 2016, with financial services making the largest contribution to the increase in the services trade surplus. In the first 3 quarters of 2017, supported by the previous depreciation of sterling and robust export market growth, net exports have on average contributed 0.9 pps. to year-on-year growth. Net trade is therefore expected to make a positive contribution to growth in 2017, which is expected to partially offset the impact of weaker domestic demand. Over the forecast horizon, net export growth is forecast to grow in line with growth projections in export markets as the boost from the previous sterling depreciation fades.

Graph 1.4: Net exports' contribution to GDP growth



Source: Office for National Statistics

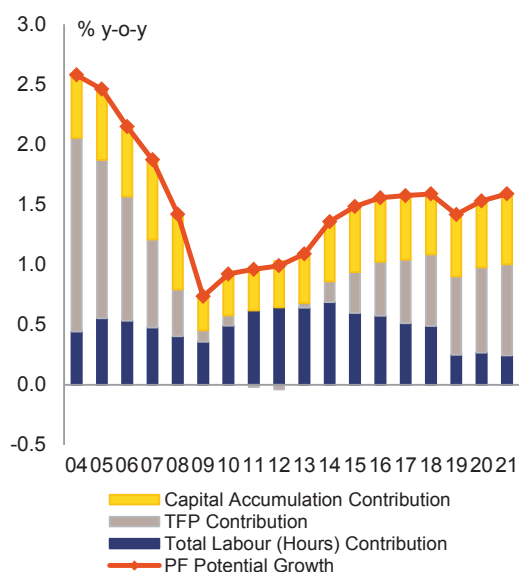
GDP growth is expected to remain subdued over the forecast horizon, slowing gradually to 1.4 % in 2018 and 1.1 % in 2019. As discussed previously, alongside the moderating contribution of net exports, consumption growth is projected to be modest, in line with weak real wage growth and diminishing consumer confidence, while uncertainty is expected to continue to weigh on business investment. The projections for 2019 are based on a purely technical assumption of status

quo in terms of trading relations between the EU27 and the UK. This is for forecasting purposes only and has no bearing on the talks underway in the context of the Article 50 process. However, as this purely technical assumption implies a relatively benign scenario, the risks to the 2019 baseline forecast are large and predominantly to the downside

Potential growth

Weak productivity growth continues to weigh on potential GDP growth. In line with the stagnation of labour productivity since the economic downturn, potential GDP growth has remained relatively subdued compared to the pre-crisis period (Graph 1.5). While the contribution from total factor productivity (TFP) increased slightly from 2014 to 2016, most of the modest increase in potential output since the downturn has been due to a growing labour force.

Graph 1.5: Potential GDP growth



Source: European Commission

Inflation

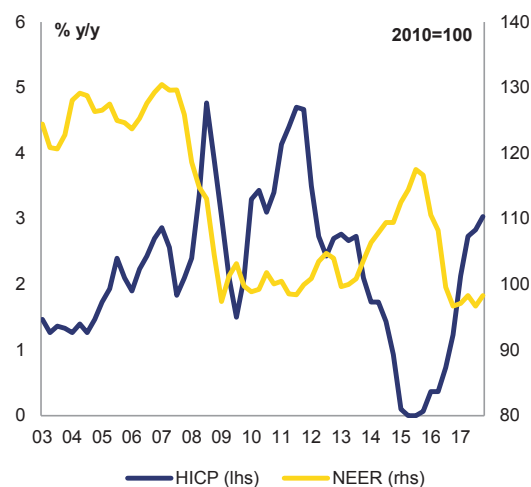
Consumer prices rose sharply in 2017 following the 2016 depreciation of sterling (Graph 1.6). The harmonised index of consumer prices measure of inflation stood at 3.0 % in December 2017. After peaking in 2017, inflation is expected to remain elevated in 2018 at 2.7 %. In 2019, inflation is projected to ease to 2.0 %, matching

the Bank of England's inflation target of 2 %.

Labour market

Headline labour market figures continued to strengthen amid slowing economic growth (Graph 1.7). In 2016, activity (20-64) (81 %), long-term unemployment (15-74), (1.3 %) youth unemployment (15-24) (13 %) and the rate of youth not in employment, education or training (NEET) (15-24) (10.9 %) were all on an improving or stable path. Employment (20-64) and unemployment (15-64) rates in Q3-2017 at 78.2 % and 4.2 % respectively continued this positive trend. The activity rate is on a long-term positive path. Strong employment growth together with modest economic growth continued the trend of weak productivity growth since the 2008 crisis (see Section 3.4).

Graph 1.6: **Inflation and the nominal effective exchange rate (NEER)**



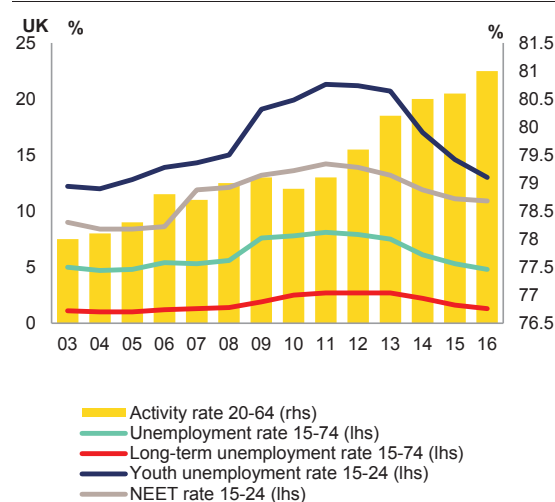
Source: European Commission

The decrease in unemployment masks remaining labour market reserves (Graph 1.8). While unemployment is now below pre-crisis levels, the share of underemployed part-time workers in the active population (i.e. workers who would like to work full time but cannot find full-time work) is still higher than before the crisis (4.5 % of the labour force in Q3-2017 as compared to 3.9 % in Q1-2008). Other broad indices of labour market reserves have also shown a less steep decline than the unemployment rate (European Commission 2017a). These suggest

there is still untapped labour market potential (see Section 3.3).

Net migration to the UK continues but has fallen from recent highs. Net migration to the UK was estimated at + 230,000 to the year ending June 2017, down from +336,000 a year earlier. EU citizens accounted for three quarters of the fall in net migration.

Graph 1.7: **Labour market indicators**



Source: Eurostat

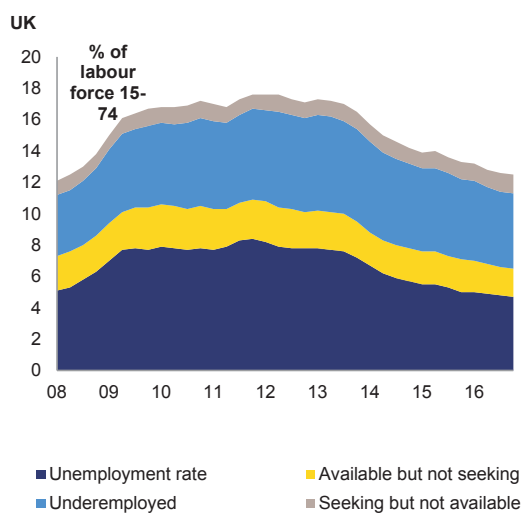
Despite the labour market recovery, wage growth has remained moderate and below the rate of inflation. After rising moderately to 2.4 % in 2016, nominal wage growth eased in 2017. Weak nominal wage growth alongside elevated consumer price inflation has meant that real wage growth turned negative, to -0.4 % year-on-year in Q3-2017. Nominal wage growth is expected to be around 2.1 % in 2017, below the projection for consumer price inflation of 2.7 %, resulting in negative real wage growth for the year as a whole.

Factors explaining modest nominal wage growth include weak productivity developments, as well as composition effects as low-wage jobs are added to the economy. According to Bank of England estimates, the sectoral, occupational and skills composition of employment growth may reduce wage growth by about 0.7 pps. in 2017 (Bank of England, 2017).

Self-employment has also played an important role in employment creation in the recovery.

Since Q1-2009, self-employment has increased by about one million and accounts for 36 % of total employment growth to Q3-2017. Self-employed persons now account for around 15 % of the workforce. However, as discussed in Section 3.3, some self-employed persons tend to be less secure and less well paid than regular employees.

Graph 1.8: **Unemployment rate and potential additional labour force**



Source: Eurostat

Social developments

Income inequality remains level with the EU average. After having increased in recent years, in 2016 the share of income of the richest 20 % of households was 5.1 times greater than that of the poorest 20 %, which was slightly below the EU average, (European Commission, 2017a). Since 2010, growth in GDP has outpaced growth in household disposable income, weakening the inclusiveness of the recovery, even as the tax benefit system continues its above-average performance in reducing inequality in disposable incomes.

Wealth inequality is high. The recent house price increases exacerbate inequality which results from the uneven ownership of housing assets (Resolution Foundation, 2017a). This reverses a pre-crisis trend of falling wealth inequality due to broadening home ownership. Rent increases are also having an effect, as the median income of tenants was just 69 % of that of owners, one of the lowest ratios in the EU.

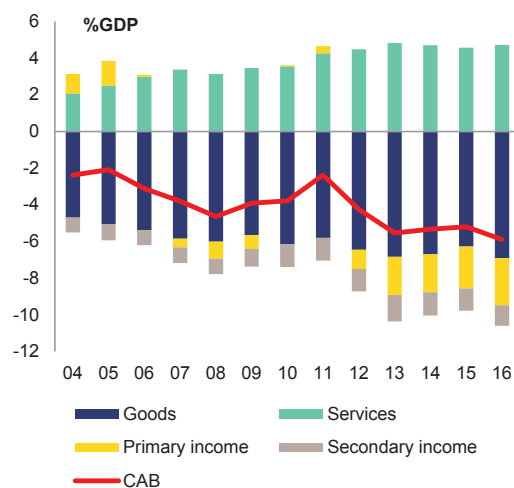
External position

The large current account deficit continues to pose external financing risks. The deficit widened to 5.9 % of GDP in 2016, the largest deficit on record (Graph 1.9). In Q3-2017, the current account deficit stood at 4.5 % of GDP, which implies sizeable external financing needs. Furthermore, at -3.3% of GDP in cyclically-adjusted terms, the current account deficit remains considerably below the country-specific 'norm' of 0% suggested by fundamentals⁽⁴⁾. However; the composition of the financing of the deficit mitigates some of these risks. The deterioration since 2011, the last year the current account deficit was below 3 % of GDP, has been largely driven by a decline in the primary income balance, which fell to -2.6 % of GDP in 2016. This is because UK earnings on assets abroad have fallen relative to the earnings on foreign investments in the UK. Nonetheless, the net trade response to sterling's depreciation in 2016 has been disappointing as there was a widening in the trade deficit to 2.1 % of GDP, the largest trade deficit of the post-crisis period. However, the trade deficit has been broadly stable, standing at around 2 % since 2012, and has improved compared to the pre-crisis period.

Despite the widening in the current account deficit, the net international investment position narrowed substantially. The UK's negative net international investment position improved from -18.4 % of GDP in 2015 to -1.1 % of GDP in 2016 (Graph 1.10). This was a result of total assets increasing by GBP 1.36 trillion (EUR 1.55 trillion) to GBP 10.94 trillion (EUR 12.48 trillion), the highest value of assets (in GBP) held in 5 years. The change in the value of assets reflects both an accumulation of net assets, but also, the 2016 fall of the sterling exchange rate to an eight-year low. In 2016 the decline in the nominal effective exchange rate by 13 % from 2015 led to a higher valuation of the stocks held abroad when converted back into sterling.

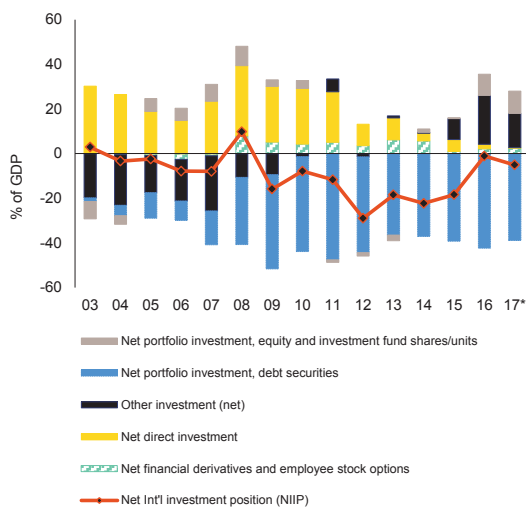
⁽⁴⁾ The current account 'norm' benchmark is derived from regressions capturing the main fundamental determinants of the saving-investment balance (e.g. demographics, resources), as well as policy factors and global financial conditions. See also European Commission, 2017, 'Empirical current account benchmarks: modelling the impact of demographic variables', LIME Working Group, 24 April 2017.

Graph 1.9: Current account balance



Source: Office for National Statistics & European Commission

Graph 1.10: Net international investment position



Source: Office for National Statistics & European Commission

Monetary policy

In November 2017, the Bank of England tightened monetary policy. The Bank's Monetary Policy Committee (MPC) voted to increase Bank Rate by 0.25 percentage points, to 0.5%. The MPC also voted to maintain the stock of sterling non-financial investment-grade corporate bond purchases at GBP 10 billion (EUR 11.4 billion) and to maintain the stock of UK government bond purchases at GBP 435 billion (EUR 496 billion). In its decision summary, the MPC stated that it was appropriate to tighten modestly the stance of monetary policy in order to return inflation

sustainably to the target. The MPC decision also stated that future increases in Bank Rate are expected to be at a gradual pace and to a limited extent.

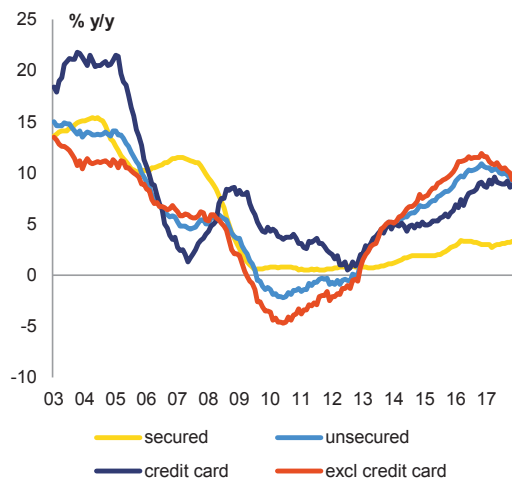
Financial sector and debt

Following the financial crisis UK banks have deleveraged and strengthened their balance sheets. The total assets of the banking system declined by some 18% between the peak recorded at the end of 2008 and the end of 2015, but started to grow again afterwards. As of September 2017, total assets had recovered most of the decline and were only 5% below their 2008 peak. The repair of the banks' balance sheets involved a change in their structure as well. Banks have increased the share of their domestic lending and domestic assets as a share of total assets while reducing the share of overseas and intra-financial sector liabilities.

Credit growth has recovered since the beginning of 2016 for all categories of borrowers, led by consumer credit growth. Lending to households grew by 4.1% year-on-year, while lending secured on dwellings grew by 3.3% (Graph 1.11). Alongside the fall in the households saving ratio and despite a slight slowdown in November, unsecured consumer credit continued to grow rapidly at 9.1% year-on-year in November.

The rapid rise in credit growth prompted the Prudential Regulation Authority and the Financial Conduct Authority to bring forward the assessment of stressed losses on consumer credit lending in the Bank of England's 2017 annual stress test. Additionally, the Bank's Financial Policy Committee, decided in November 2017 to raise the UK countercyclical capital buffer rate from 0.5% to 1%, the rate deemed appropriate in a standard domestic risk environment. This decision reflects the Committee's assessment that apart from the risks related to Brexit, domestic risks are at a standard level overall and that while debt levels are high, overall credit growth is only a little above nominal GDP growth, and debt-servicing costs are low.

Graph 1.11: Consumer credit growth



Source: Bank of England

Despite stabilising over recent years, household debt remains high. After having fallen steadily from a peak of 96 % of GDP in 2009, household debt has broadly stabilised in the past 4 years. In 2016 household debt stood at 86 % of GDP. Despite this improvement, the Commission's prudential threshold and fundamentals-based benchmarks for household debt suggest that household indebtedness still presents financial stability risks. Furthermore, the Commission's household debt sustainability indicators (S1 and S2) suggest that the near record low households saving ratio should increase to make debt levels sustainable over both the medium and long term⁽⁵⁾. Given the high level of indebtedness of households, the European Systemic Risk Board — which conducted, in 2016, a forward-looking EU-wide assessment of the real estate market across the EU — issued a warning on 28 November 2016 to the UK (as well as to seven other EU countries) on the vulnerabilities of the residential real estate sector. The Board subsequently concluded that

(5) Fundamentals-based benchmarks are derived from regressions capturing the main determinants of credit growth and taking into account a given initial stock of debt. Prudential thresholds represent the debt threshold beyond which the probability of a banking crisis is high, minimising the probability of missed crisis and that of false alerts. Debt sustainability indicators correspond to the permanent adjustment in the savings rate to (i) reach the fundamental benchmark for debt within 15 years (S1) and (ii) ensure that net financial liabilities are eventually reimbursed (S2). See also European Commission (2017), "Benchmarks for the assessment of private debt" Note for the Economic Policy Committee.

while there are pockets of risky lending, as highlighted by the growth in unsecured credit, vulnerabilities related to the real estate sector appear to have reduced. The easing of house price growth in 2017, as well as internal European Commission forecasts, point to subdued real house price growth during 2017-2019. As the moderation in house price growth is expected to occur alongside a lower level of mortgage approvals, this should slow the pace of the build-up in mortgage debt.

Growth in credit for non-financial corporates was 2.1 % year-on-year as of December 2017. The slight increase was driven by credit to large businesses, which grew by 3.0 % in November. Over the same period, credit growth to small and medium-sized enterprises dropped marginally, to 0.4 % in October to 0.4 % in November. Helped by the increase in the quality of banks' assets and the stock of loans, the ratio of gross non-performing-loans improved and was one of the lowest in the EU at 1.8 % as of the end of 2016.

Public finances

The budget deficit has declined quite substantially in recent years, although it is expected to increase slightly in the current fiscal year (to the end of March 2018). The general government deficit fell to 2.3 % of GDP in 2016-2017, below the reference value of 3 % of GDP contained in the Treaty on the Functioning of the EU. This represented a substantial fall compared to a deficit of 4 % of GDP in 2015-2016 and was partly due to some revenue windfalls, such as exceptionally high self-declared personal income taxes ahead of a change to dividend taxation at the start of the current fiscal year. The reversal of these windfall revenues is expected to give rise to a small increase in the deficit in the current fiscal year, with the Commission 2017 autumn forecast projecting an increase to 2.5 % of GDP. The deficit is then expected to resume its declining trend and is projected to fall to 1.3 % of GDP in 2019-2020. The structural budget balance is expected to fall from 2.9 % of GDP in 2017-2018 to 1.4 % of GDP in 2019-2020.

The measures announced as part of the 2017 Autumn Budget (HM Treasury (2017a)) will slow the expected pace of fiscal consolidation in the coming years. A majority of the measures

announced by the Chancellor of the Exchequer on 22 November 2017 related to government expenditure, with the introduction of a number of new expenditure items and a slowing of the pace of planned reductions in existing items. While the Office for Budget Responsibility (OBR) still expects the UK government to meet its fiscal targets (see Section 3.1), it projects the nominal general government deficit to be higher across its forecast period, compared to its March 2017 forecast. For example, the OBR now expects the deficit to stand at 1.8 % of GDP in 2019-2020, compared to 1.1 % of GDP in its previous forecast. While some of this increase is due to data revisions and changes in the OBR's macroeconomic forecast, most of it is due to the additional measures announced in the 2017 Autumn Budget, such as additional spending on the National Health Service or increased funding for measures designed to boost home ownership.

The general government debt remains at a high level, reaching 86.8 % of GDP in 2016-2017.

According to the Commission 2017 autumn forecast, the debt-to-GDP ratio is expected to have peaked in 2016-2017 and to fall gradually over the remainder of the forecast period. However, this forecast does not take account of the measures announced in the 2017 Autumn Budget, which are expected to further increase the general government deficit and debt in the coming years. According to the OBR's latest economic and fiscal outlook (OBR, 2017a), which takes into account these budget measures, the debt-to-GDP ratio is now expected to peak at 87.4 % of GDP in 2019-2020 before starting to decline gradually. High levels of public debt pose macroeconomic risks, such as by reducing the economy's shock absorption capacity or increasing its exposure to unexpected changes in market sentiment.

Table 1.1: Key economic and financial indicators - United Kingdom

	2004-07	2008-12	2013-14	2015	2016	forecast		
						2017	2018	2019
Real GDP (y-o-y)	2.6	0.0	2.6	2.3	1.9	1.8	1.4	1.1
Potential growth (y-o-y)	2.3	1.0	1.2	1.5	1.4	1.5	1.4	1.4
Private consumption (y-o-y)	2.6	-0.4	1.9	2.6	2.9	.	.	.
Public consumption (y-o-y)	2.3	1.0	1.3	0.6	0.8	.	.	.
Gross fixed capital formation (y-o-y)	3.8	-2.3	5.2	2.8	1.8	.	.	.
Exports of goods and services (y-o-y)	6.0	0.7	1.7	5.0	2.3	.	.	.
Imports of goods and services (y-o-y)	5.6	0.0	3.8	5.1	4.8	.	.	.
Contribution to GDP growth:								
Domestic demand (y-o-y)	2.8	-0.5	2.4	2.2	2.4	.	.	.
Inventories (y-o-y)	-0.1	0.0	0.2	0.1	-0.1	.	.	.
Net exports (y-o-y)	0.0	0.2	-0.7	-0.1	-0.8	.	.	.
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.5	0.5	0.7	0.8	0.7	0.6	0.6	0.5
Capital accumulation (y-o-y)	0.6	0.4	0.5	0.6	0.5	0.6	0.5	0.5
Total factor productivity (y-o-y)	1.2	0.1	0.1	0.2	0.2	0.3	0.3	0.4
Output gap	1.6	-3.0	-1.4	0.3	0.6	0.6	0.4	0.2
Unemployment rate	5.1	7.4	6.8	5.3	4.8	4.5	4.7	4.8
GDP deflator (y-o-y)	2.7	1.9	1.8	0.5	2.0	2.3	2.1	1.7
Harmonised index of consumer prices (HICP, y-o-y)	2.0	3.3	2.0	0.0	0.7	2.7	2.7	2.0
Nominal compensation per employee (y-o-y)	4.9	1.8	1.6	1.1	3.3	2.1	2.2	2.5
Labour productivity (real, person employed, y-o-y)	1.5	-0.3	0.8	0.6	0.5	.	.	.
Unit labour costs (ULC, whole economy, y-o-y)	3.3	2.0	0.9	0.4	2.7	1.5	1.5	1.8
Real unit labour costs (y-o-y)	0.6	0.1	-0.9	0.0	0.7	-0.7	-0.7	0.1
Real effective exchange rate (ULC, y-o-y)	3.2	-4.2	2.3	6.7	-9.8	-5.0	2.4	0.3
Real effective exchange rate (HICP, y-o-y)	0.8	-3.6	2.7	5.5	-10.6	-5.1	3.3	.
Savings rate of households (net saving as percentage of net disposable income)	3.2	5.1	3.6	4.3	2.0	.	.	.
Private credit flow, consolidated (% of GDP)	15.8	2.3	6.9	3.5	11.5	.	.	.
Private sector debt, consolidated (% of GDP)	174.3	185.4	170.2	164.7	170.2	.	.	.
of which household debt, consolidated (% of GDP)	87.8	92.8	86.0	85.4	86.1	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	86.5	92.5	84.1	79.1	84.0	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (2)	.	1.9	1.8	.	1.6	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-1.3	0.3	-2.3	-4.0	-3.3	-1.9	-1.3	-1.6
Corporations, gross operating surplus (% of GDP)	21.2	21.3	21.6	21.5	21.3	22.7	23.5	23.5
Households, net lending (+) or net borrowing (-) (% of GDP)	1.5	4.0	2.4	3.0	1.0	-0.6	-1.0	-0.7
Deflated house price index (y-o-y)	8.1	-4.3	3.1	5.3	5.5	.	.	.
Residential investment (% of GDP)	3.9	3.2	3.4	3.6	3.7	.	.	.
Current account balance (% of GDP), balance of payments	-2.8	-3.8	-5.4	-5.2	-5.8	-5.1	-4.6	-4.4
Trade balance (% of GDP), balance of payments	-2.5	-2.2	-2.0	-1.7	-2.1	.	.	.
Terms of trade of goods and services (y-o-y)	-0.3	-0.1	1.8	0.9	1.4	0.8	0.5	0.5
Capital account balance (% of GDP)	0.0	0.0	-0.1	-0.1	-0.1	.	.	.
Net international investment position (% of GDP)	-5.4	-10.9	-20.4	-18.4	-4.4	.	.	.
Net marketable external debt (% of GDP) (1)	-25.4	-27.0	-14.0	-10.9	0.9	.	.	.
Gross marketable external debt (% of GDP) (1)	357.7	546.6	434.0	392.0	418.3	.	.	.
Export performance vs. advanced countries (% change over 5 years)	-1.6	-15.1	-4.2	3.7	-1.6	.	.	.
Export market share, goods and services (y-o-y)	-3.5	-4.6	1.3	4.1	-4.7	.	.	.
Net FDI flows (% of GDP)	0.2	0.3	-3.1
General government balance (% of GDP)	-2.9	-8.1	-5.4	-4.3	-2.9	-2.1	-1.9	-1.5
Structural budget balance (% of GDP)	.	-6.2	-4.6	-4.4	-3.3	-2.5	-2.2	-1.6
General government gross debt (% of GDP)	40.3	71.1	86.5	88.2	88.2	86.5	85.2	84.1
Tax-to-GDP ratio (%)	34.8	35.0	34.2	34.4	35.0	35.3	34.9	34.9
Tax rate for a single person earning the average wage (%)	26.9	25.3	23.8	23.4	23.3	.	.	.
Tax rate for a single person earning 50% of the average wage (%)	20.8	19.1	15.6	14.8	14.7	.	.	.

(1) NIIP excluding direct investment and portfolio equity shares.

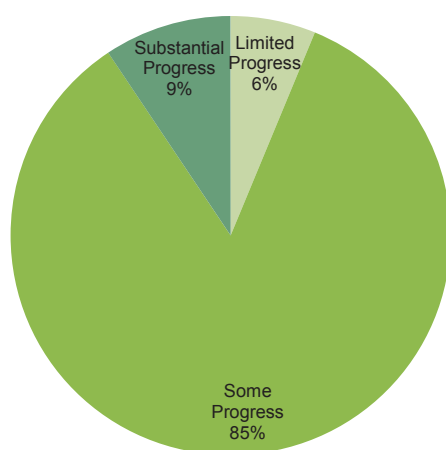
(2) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.

Source: Eurostat and ECB as of 30 Jan 2018, where available; European Commission for forecast figures (Winter forecast 2018 for real GDP and HICP, Autumn forecast 2017 otherwise)

2. PROGRESS WITH COUNTRY-SPECIFIC RECOMMENDATIONS

Progress with implementing the recommendations addressed to the UK in 2017⁽⁶⁾ has to be seen in a longer term perspective since the introduction of the European Semester in 2011. The UK has undertaken several reforms since then. Looking at the multi-annual assessment of CSR implementation, 85 % of CSRs addressed to the UK have recorded ‘some progress’. A further 9 %, covering access to finance and fiscal policy, achieved ‘substantial’ progress. The other 6 % of CSRs recorded only ‘limited’ progress (see Graph 2.1). Labour market, housing and infrastructure CSRs have tended to record some progress. While the government has put in place a range of relevant policies, these are all deep rooted and long-standing policy challenges requiring sustained reform efforts. It is also not clear how successful current policy will be. There has been more variation in the assessment of fiscal CSRs over time as the pace of ongoing fiscal consolidation has fluctuated, as have trends in public investment.

Graph 2.1: Overall multiannual implementation of 2011-2017 CSRs to date



(1) The overall assessment of the country-specific recommendations related to fiscal policy exclude compliance with the Stability and Growth pact.
 (2) 2011-2012: Different CSR assessment categories
 (3) The multiannual CSR assessment looks at the implementation since the CSRs were first adopted until the March 2018 Country Report.

Source: European Commission

The fiscal deficit has gradually decreased to

⁽⁶⁾ For the assessment of other reforms implemented in the past, see in particular Section 3.

below 3 % of GDP. The UK has left the Excessive Deficit Procedure of the Stability and Growth Pact.

The UK has announced a range of policy measures to increase housing supply. Residential construction and net additions to the housing stock have risen since the start of the decade, due both to an ongoing cyclical recovery from a post-crisis trough and to policy action, including major reforms to the planning system. Housing affordability has continued to deteriorate, however, despite a recent slowdown in house price growth. The ongoing deterioration in affordability, which has been particularly acute in major urban centres, underlines the long-term and structural challenges that exist in the housing market. These challenges are nevertheless recognised by the government, which has set itself the ambitious goal of increasing annual housing supply to 300 000 units by the mid-2020s. Household debt remains high but household balance sheets are strong on aggregate, while households and the broader economy appear resilient to short-term shocks.

The UK has received evolving recommendations on labour market and social issues. On skills and apprenticeships, there remain concerns about the quality and/or qualification level of actions undertaken, given both labour market needs and the implications for the progression potential for individuals already in the workforce. On childcare, reforms to date have been constant but gradual. The full roll-out of some initiatives is now underway. There is some dissatisfaction from both providers and service users, but progress can be seen. The UK received recommendations from 2011 to 2014 on poverty and the welfare system, with a particular focus on child poverty, which remains quite high. Although the tax benefit system currently performs quite well in alleviating inequality, this will come under pressure as previously announced cutbacks and freezes are rolled out against a background of increased inflation.

The UK received recommendations on infrastructure in 2012 to 2014, and again in 2016. The government has set out ambitious plans to remedy shortfalls in network infrastructure in its National Infrastructure Delivery Plan. While tangible progress to date has been modest and

pressure on networks is building, the UK is starting to deal with the cumulated effects of decades of public under-investment in infrastructure. The government is also taking steps to increase private infrastructure investment, particularly in energy, and some major projects have been approved.

The UK has made some⁽⁷⁾ progress in addressing the 2017 country-specific recommendations (CSRs). The UK currently has three CSRs. The fiscal CSR 1 is not assessed in this country report. There has been some progress on CSR 2, which relates to housing supply. The government is implementing a wide-range of measures to boost housing supply and announced further measures in its 2017 Autumn Budget.

⁽⁷⁾ For information on the level of progress and actions taken to address the policy advice in each respective subpart of a CSR, see the overview table in the Annex. This overall assessment does not include an assessment of compliance with the Stability and Growth Pact.

These measures are likely to have contributed to higher annual housing completions in recent years, although new supply of housing continues to fall short of demand, particularly in major urban centres. There has also been some progress on CSR 3 on skills. Skills challenges remain and are multi-faceted. The Apprenticeship Levy, the Institute of Apprenticeships, and other measures either announced or begun — such as Technical Education reforms and the National Retraining Scheme — offer scope for lifelong learning progression assistance for those ‘stuck’ in low-wage, entry-level jobs.

European Structural and Investment Funds (ESIF) are important in supporting inclusive growth and convergence in the UK. Box 2.1 discusses ESIF investment, which funds projects including investment in transport and broadband networks, support to SME competitiveness, skills development and lifelong learning.

Table 2.1: Assessment of progress with 2017 CSRs

The United Kingdom	Overall assessment of progress with 2017 CSRs: Some progress
CSR 1: <i>Pursue a substantial fiscal effort in 2018-19 in line with the requirements of the preventive arm of the Stability and Growth Pact, taking into account the need to strengthen the ongoing recovery and to ensure the sustainability of the United Kingdom’s public finances.</i>	CSRs related to the Stability and Growth Pact will be assessed in spring once the final data is available.
CSR 2: <i>Take further steps to boost housing supply, including through reforms to planning rules and their implementation.</i>	Some progress in boosting housing supply.
CSR 3: <i>Address skills mismatches and provide for skills progression, including by continuing to strengthen the quality of apprenticeships and providing for other funded “Further Education” progression routes.</i>	Some progress in addressing skills and apprenticeship issues.

Source: European Commission

Box 2.1: Tangible results delivered through EU support to structural change in the UK

The UK is a beneficiary of significant European Structural and Investment Funds (ESI Funds) support and can receive up to EUR 16.3 billion (GBP 14.3 billion) by 2020. This represents around 3 % of annual public investment ⁽¹⁾ from 2014-2018. By 31 December 2017, an estimated EUR 10.23 billion (GBP 8.97 billion) (62.8 % of the total) had been allocated to projects on the ground. Currently, 171 000 enterprises receive support which is expected to create 44 000 new jobs, broadband access is being extended to a further 128 160 households, and projects are being implemented to reduce greenhouse gas emissions by 169 406 tonnes of CO₂ equivalent a year. Of the total EU financing, 20 % is to be delivered via financial instruments, up from 9 % in 2007-2013.

ESI Funds help address structural policy challenges and implement country-specific recommendations. The actions financed include: promoting R&D in the private sector and SME competitiveness; increasing the share of energy from renewables through low carbon solutions and transport and smart cities; and contributing to the [mitigation of climate change impacts] through sustainable land use and the management of flood and coastal erosion risks. Infrastructure investment is being made in less developed regions, including in the TEN-T and broadband networks. The UK is using ESI funding to reduce inactivity among young people and long-term welfare benefit recipients and to improve training and skills, including through apprenticeship schemes. It is also investing in education and lifelong learning, and promoting social inclusion by fighting poverty and discrimination.

Take up of the European Fund for Strategic Investments (EFSI) in the UK is progressing. As of December 2017, the total volume of financing operations approved under the EFSI was EUR 2.6 billion (GBP 2.3 billion), of which the energy sector accounts for EUR 2 billion (GBP 1.75 billion). This is expected to trigger total private and public investment of EUR 18.8 billion (GBP 16.5 billion). Within the total, 20 projects involving the UK have been approved so far under the Infrastructure and Innovation Window (including 11 multi-country projects), amounting to EUR 2.1 billion (GBP 1.84 billion) in EIB financing under the EFSI. This is expected to trigger about EUR 15 billion (GBP 13.1 billion) in investment. Under the SME Window, 12 agreements with financial intermediaries have been approved. European Investment Fund financing enabled by the EFSI amounts to EUR 489 million (GBP 429 million), which is expected to mobilise around EUR 3.8 billion (GBP 3.3 billion) in total investment and benefit close to 3 000 smaller companies or start-ups.

Allocations under Horizon 2020, the Connecting Europe Facility and other directly managed EU funds are additional to the ESI Funds. By the end of 2017, the UK had signed agreements for EUR 348 million (GBP 305 million) for projects under the Connecting Europe Facility.

⁽¹⁾ Public investment is defined as gross fixed capital formation + investment grants + national expenditure on agriculture and fisheries.

3. REFORM PRIORITIES

3.1. PUBLIC FINANCES AND TAXATION

Taxation policy

Despite an increase in the tax burden in recent years, the UK's tax-to-GDP ratio remains well below the EU average. Tax receipts increased by 7 % in the 2016-2017 financial year, bringing the total tax burden to 34.4 % of GDP (Table 3.1.1), below the GDP-weighted EU average of 39 %.

Table 3.1.1: **Composition of tax revenues, 2016-2017**

Tax category	GBP billion	% Revenue	% GDP
Personal income tax	177.2	26.3	9
National insurance contributions (employers and employees)	125.9	18.7	6.4
Corporation tax	54.1	8	2.8
Property taxes	71.7	10.7	3.7
Capital taxes	12.1	1.8	0.6
VAT	135.4	20.1	7
Excise duty	53.5	8	2.7
Other taxes	42.8	6.4	2.2
Total	672.7	100	34.4

Source: Autumn Budget 2017

Personal income tax revenues increased by 4.9 % in 2016-2017 and continue to make the largest contribution to tax revenues. Around a quarter of the increase reflected stronger income tax revenues on bonuses in the financial and business services sectors. Windfall revenues related to dividend taxation also contributed to the increase. The tax burden on labour is among the lowest in the EU across the income scale. At 28.6 % of the average wage for a two-earner couple with two children, the UK has the third lowest tax wedge in the EU (37.1 %) ⁽⁸⁾.

Although there were large increases in corporate tax revenue across the main sectors, a significant proportion of this can be attributed to a change in the basis of accounting for corporate income tax. As discussed in previous country reports, some elements of the tax system may create disincentives for corporate investment. The effective marginal tax rate for new investment stood at 24.7 % in 2016, above the non-weighted EU average of 15.7 % and among the highest of all

⁽⁸⁾ The tax wedge shows the proportional difference between the costs of a worker to their employer and the employee's net earnings. Data are taken from the European Commission Tax and Benefit Indicator database.

EU countries (ZEW, 2016). This is largely due to property taxation and the capital allowance regime. Recurring taxes levied on business property are higher than elsewhere in the OECD and could represent a barrier to investment (IFS, 2014).

The UK has moved to a more territorial corporate tax system in recent years and has introduced measures to protect the tax base from aggressive tax planning and avoidance. In line with the OECD Base Erosion Profit Shifting Action Plan (2013) as well as the ATADs⁹, these measures include: (i) restrictions on interest for corporate tax deductibility; (ii) extending the scope of withholding tax on royalties paid abroad; and (iii) the introduction of hybrid mismatch rules, which counteract cross-border situations where, for example, the same expenditures are tax deductible in both jurisdictions. In 2016, the UK also changed its Patent Box scheme (a tax incentive regime in relation to income from intellectual property) to comply with international tax avoidance rules (HM Revenue & Customs, 2015). As agreed in the Code of Conduct Group for Business Taxation, the Patent Box was aligned to the modified “nexus approach”, which limits the application of the tax incentive to taxpayers that incurred relevant expenditures, such as R&D. While the economic evidence for the effectiveness of patent boxes as a means to encourage R&D remains weak (CPB, 2014), they may be used as a tax competition tool. (Alstadsæter et. al, 2017). The provisions of the Anti-Tax Avoidance Directives (ATADs) will have to be transposed into national law by the end of 2018 and 2019. It will be important to assess to what extent the transposition of the ATADs will limit the scope for aggressive tax planning in the United Kingdom.

The tax-exemption of dividends received from abroad and lack of a withholding tax on dividends paid are considered features that may be used by international companies in aggressive tax planning. In a recent study (van't Riet and Lejour, 2017), the UK was ranked first among 108 jurisdictions in the world having a tax regime that companies could potentially use for facilitating the routing of untaxed dividends. Since

⁽⁹⁾ Council Directive 2016/1164 of 12 July 2016

2009, the UK has effectively exempted dividend income⁽¹⁰⁾ received by UK companies from abroad to UK tax although the exemption does include some anti-avoidance provisions. Furthermore, the UK does not impose withholding tax on dividends paid by companies in the UK.

With one of the stated aim being to improve its tax competitiveness, the UK reformed its controlled foreign companies rules in 2013⁽¹¹⁾. This allows international companies to exempt certain chargeable profits from financing operations of their non-UK subsidiaries. The Commission has recently announced an in-depth investigation into the controlled foreign companies rules to see if the scheme allows multinationals to pay less UK tax, in breach of EU State Aid rules (European Commission, 2017b).

While the UK is in line with the EU average on VAT compliance⁽¹²⁾, the government loses potential revenues by using reduced VAT rates. At 17.2 %, the actionable VAT Policy Gap, due to exemptions and reduced rates, was higher than the EU average (16.4 %) in 2015⁽¹³⁾⁽¹⁴⁾. Foregone revenues due to reduced VAT rates are estimated to have been 2.5 % of GDP in 2016-2017 (UK Government, 2018). In addition to its standard 20 % VAT rate, the UK applies a reduced rate of 5 %, along with a super-reduced rate of 0 %⁽¹⁵⁾.

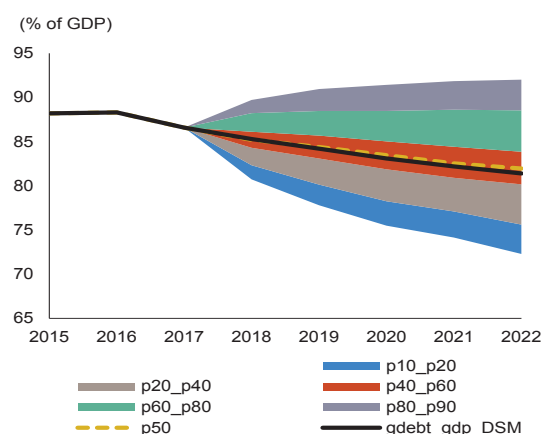
The UK is taking a number of measures to address VAT fraud in e-commerce. For example, online marketplaces will become liable for any unpaid VAT of a UK business arising from supply of goods in the UK via that marketplace. These rules will also extend to online marketplaces for non-UK suppliers, when the marketplace knew (or

should have known) that the supplier should be registered for VAT purposes in the UK.

Long-term sustainability of public finances

While the high level of general government debt represents a source of vulnerability for the UK economy, no substantial short-term fiscal risks exist at the current time. According to the Commission 2017 autumn forecast, general government debt is expected to have peaked at 86.8 % of GDP in 2016-2017 before falling over the forecast period, although this forecast does not take account of measures announced in the 2017 Autumn Budget. The Commission's short-term fiscal risk indicator, which is based on a comprehensive approach that takes both fiscal and macro-financial variables into account, remains below the threshold that indicates a risk.

Graph 3.1.1: Debt projections based on probability



Source: European Commission, Debt Sustainability Monitor 2017

The debt-to-GDP ratio is expected to remain at a high level in the medium term and could increase further if potential shocks were to hit the UK economy. In a baseline scenario, general government debt is expected to remain at around 80 % of GDP at the end of the Commission's projection period (2028). Potential shocks to nominal growth, interest rates or the structural primary balance pose risks to this scenario. As shown in Graphs 3.1.1 and 3.1.2, the materialisation of such shocks could cause general government debt to rise above 90 % of GDP. In order to reduce the debt-to-GDP ratio to 60 % of GDP by 2032, a cumulative fiscal effort of 2.1 pps. of GDP (relative to a scenario in which there is no

⁽¹⁰⁾ Dividend income received by the UK in 2016 was EUR 67 billion (source: Eurostat).

⁽¹¹⁾ The controlled foreign companies (CFC) regime in the UK is a set of anti-avoidance measures established to prevent UK group companies shifting income into low tax jurisdictions to avoid being subject to UK corporation tax.

⁽¹²⁾ The VAT gap (as a % of the total VAT liability) was in line with the EU median (10.9 %) in 2015 (CASE, 2017).

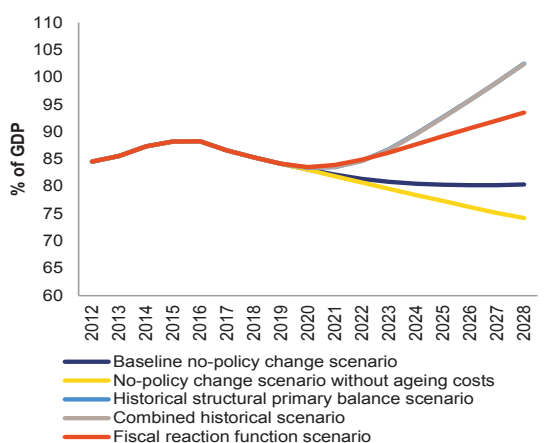
⁽¹³⁾ See CASE (2017).

⁽¹⁴⁾ The UK Treasury estimates the VAT gap to have been 9.8 % of GDP in 2015-2016.

⁽¹⁵⁾ The zero rate applies to a broad range of goods and services including many foodstuffs, books, pharmaceutical products, water supply, passenger transport and the construction of new dwellings. The 5 % rate applies, among others, to domestic fuel and power, energy-saving materials and certain residential renovations.

change to fiscal policy) would be required during the 5-year period following the final year of the Commission's forecast, i.e. by 2024⁽¹⁶⁾.

Graph 3.1.2: **Gross public debt as a % of GDP**



Source: European Commission, Debt Sustainability Monitor 2017

The UK faces medium fiscal risks in the long term. The Commission's long-term sustainability gap indicator (the S2 indicator⁽¹⁷⁾) shows that an upfront fiscal adjustment of 3.4 pps. of GDP would be needed to ensure the long-term sustainability of public finances. This is due to the projected impact of age-related public spending (contribution of 3.4 pps. of GDP), with the initial budgetary position (determined by the structural primary balance and debt level in the final year of the Commission's forecast) having a slightly positive contribution (0.1 pps. of GDP). Of the contribution of age-related spending, 1.4 pps. and 1.1 pps. of GDP relate to pensions and healthcare, respectively.

Healthcare

The healthcare system remains under financial pressure and spending in this area contributes to long-term risks to the sustainability of public finances. In its 2017 Autumn Budget and further

⁽¹⁶⁾ This is based on the S1 indicator, a medium-term sustainability risk indicator that measures the required fiscal adjustment needed over a five-year period (directly following the last forecast year) to bring the debt-to-GDP ratio to 60 % of GDP in 2032.

⁽¹⁷⁾ The S2 indicator measures the required upfront fiscal adjustment needed to stabilise public debt over the infinite horizon, taking full account of future increased liabilities linked to population ageing. In other words, it is a long-term fiscal sustainability risk indicator. It is calculated under the assumption that there is no change in fiscal policy.

announcements since, the government increased its allocation of current and capital spending to the National Health Service (NHS) in England for the coming years. According to NHS England (2018), this will contribute to real-term revenue growth of 2.4 % in 2018-2019. However, adjusted for population growth and ageing, revenues are expected to be 1.4 % higher (in real terms) in 2018-2019 and to fall by 0.8 % in 2019-2020. This follows an extended period of low revenue growth, with the Institute for Fiscal Studies estimating that revenues grew by 1.1 % per year in real terms between 2009-2010 and 2015-2016, compared to an historical average of 4.1 %. This has contributed to increased pressure on healthcare services (see Section 3.3) and a corresponding decline in performance against key access targets (National Audit Office, 2018). As discussed above, expenditure on health care is expected to give rise to a fiscal sustainability challenge in the long term.

Fiscal frameworks

In the 2017 Autumn Budget, the UK confirmed the fiscal rules adopted in the 2016 Autumn Statement. In contrast, the UK changed its fiscal rules every year between 2014 and 2016. According to the OBR (2017b), the government has a greater than 50 % chance of meeting its fiscal targets, which include a structural deficit below 2 % of GDP by 2020-2021. This is despite an announced slowing of the pace of fiscal consolidation and takes account of planned further cuts in real spending on public services (in per capita terms). The OBR highlighted that the recent decision by the Office for National Statistics to reclassify English housing associations outside the public sector, thus reducing public-sector debt, contributed to its positive assessment.

In its 2017 fiscal risks report, the OBR analysed a number of downside risks that could lead to the UK not complying with its fiscal rules. The report noted that even small changes to estimated potential GDP growth can have significant adverse effects on public finances over time. On the revenue side, it identified the emergence of evasion-related tax shortfalls and a possible slowdown in the growth of tax bases as specific budgetary risks. Spending pressures in the areas of welfare and health/social care were identified as the main risks on the expenditure side.

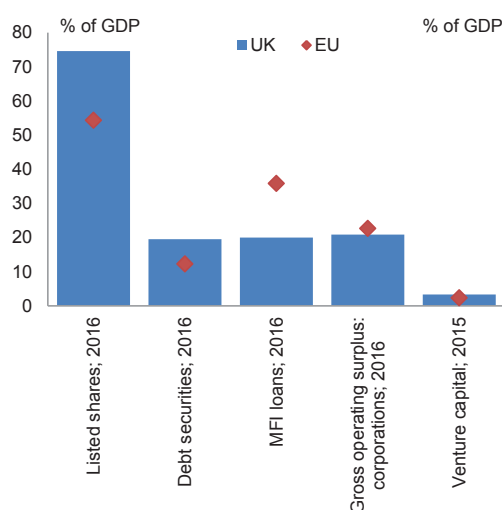
3.2. FINANCIAL SECTOR AND HOUSING

3.2.1. FINANCIAL SECTOR DEVELOPMENTS

Importance of financial services and banking

The UK is one of the world's leading financial centres, with the sector's assets representing around 10 times the country's GDP. The sector is dominated by banks, whose total assets accounted for 380 % of GDP at end-2016. Given its large size, improving the financial sector's resilience since the financial crisis has been important for both the domestic and global economies.

Graph 3.2.1: **Financing of non-financial corporates (NFCs)**

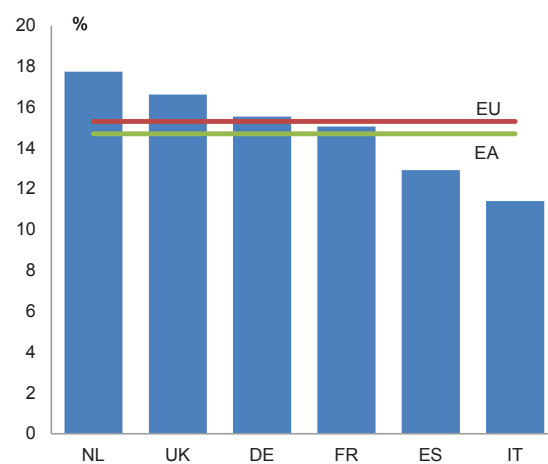


Source: European Central Bank, AMECO

Despite the large size of the banking sector, non-financial corporates are less reliant on bank credit than the EU average. At the end of 2016, loans from monetary financial institutions to non-financial corporates were around 20 % of GDP, around half the EU average (Graph 3.2.1). By contrast, listed shares represented around 75 % of GDP, approximately 20 pps. higher than the EU average. Venture capital financing plays a more significant role than in other EU countries, standing at 3.3 % of GDP in 2015 (compared to an EU average of 2.4 %). This financing mix makes UK companies less vulnerable to changes in the availability of bank credit related to the economic cycle. Bank credit to domestic households is more substantial, at about 65 % of GDP at end-2016. Its strong growth in recent years poses some risks to financial stability (see below).

UK banks have continued to strengthen their capital positions. The banking sector's aggregate Tier 1 capital ratio (i.e. the ratio of core equity capital to total risk-weighted assets) has increased by more than 600 bps since 2010, partly due to increased regulatory requirements. The ratio reached 16.7 % of risk-weighted assets in September 2017, comparing favourably to other large EU countries (Graph 3.2.2). In 2017, the Bank of England's Financial Policy Committee strengthened the application of mortgage affordability tests and raised the minimum leverage requirement (i.e. the ratio of core equity capital and total consolidated assets). This follows previous measures to prevent excessive growth in the number of highly-indebted households with mortgage loans.

Graph 3.2.2: **Tier 1 ratio (%): domestic banking groups and stand-alone banks (2016 Q4)**



Source: European Central Bank

Nevertheless, bank profitability remains weak and may pose a risk to the resilience of the sector. Although weak profitability is also a problem for EU banks in general, UK banks' profitability has continued to underperform both relative to historic levels and the EU average (Graph 3.2.3). Profitability was harmed by one-off factors in 2016, such as misconduct⁽¹⁸⁾ and restructuring costs, but improved in the first

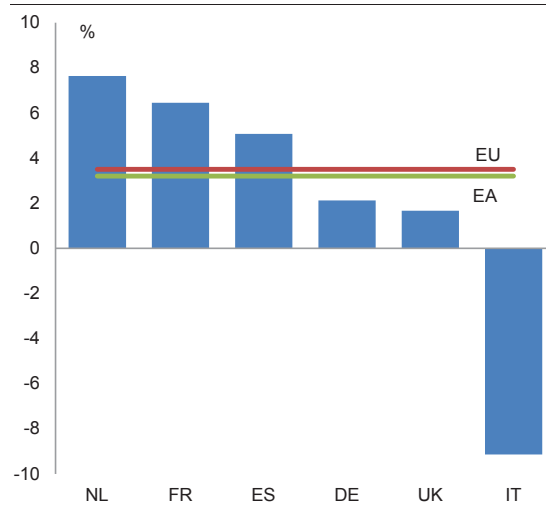
⁽¹⁸⁾ Significant misconduct costs (GBP 67 billion, EUR 76.4 billion) were provisioned for or paid by UK banks during the period 2011 to 2016. Misconduct related to the mis-selling of various financial products, such as payment protection insurance, interest-rate hedging and endowment mortgages.

quarter of 2017. Nevertheless, weak profitability poses a potential challenge for the capacity of the sector to strengthen its capital base via retained earnings.

The UK financial sector is facing important challenges related to Brexit and in particular the fact that the UK will become a third country in March 2019. This may have a significant impact on the possibility of UK financial institutions to provide their services throughout the EU.

The Bank of England’s 2017 stress tests indicate that banks remain resilient. The results of the tests indicate that the banking system would weather a simultaneous recession in the UK and globally, as well as further misconduct costs. In the first 2 years of stress, major UK banks would incur losses of around GBP 50 billion (EUR 57 billion), which could be absorbed by existing capital buffers. For the first time since the stress tests started in 2014, no single bank came out in need of further capital. Nevertheless, the Bank of England stated that a combination of a ‘disorderly’ Brexit and severe domestic and global conditions could result in a worse outcome, with a negative impact on lending. The Bank of England also stated that banks had been ‘underestimating the losses on consumer credit exposures that could occur in a severe stress’ (see Section 1).

Graph 3.2.3: **Return on equity (%): domestic banking groups and stand-alone banks (2016 Q4)**



Source: European Central Bank

Macro-prudential regulation

The UK authorities have continued to implement measures aimed at strengthening financial stability and at mitigating risks associated with the UK’s withdrawal from the EU. In 2017, the Bank of England’s Financial Policy Committee announced measures to prevent excessive growth in the number of highly-indebted households with mortgage loans. It strengthened the application of mortgage affordability tests, announced changes to banks’ leverage ratios and announced its intention to raise the minimum leverage requirement (i.e. the ratio of core equity capital and total consolidated assets). The Bank of England further implemented the bank resolution framework by publishing, in May 2017, estimates of the amount of ‘minimum requirements for own funds and eligible liabilities for bail-in’ (i.e. the MREL) for the largest UK banks. The Bank of England, the Financial Conduct Authority and the Prudential Regulation Authority are working with banks and other financial sector institutions to ensure adequate contingency planning for the UK’s withdrawal from the EU. The government plans to ensure an adequate legal and regulatory framework for financial services via the EU Withdrawal Bill and related secondary legislation.

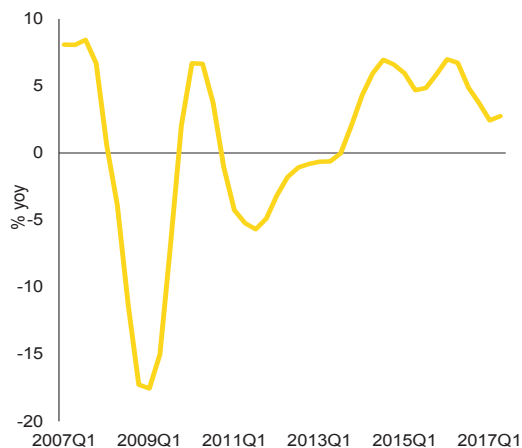
3.2.2. HOUSING SECTOR

While house price growth has slowed in recent quarters, affordability has continued to decline amid low wage growth. As discussed in previous country reports, rapid house price growth in recent years has led to a significant deterioration in affordability. This has contributed to declining rates of home ownership, particularly among younger age cohorts. With inadequate and inelastic housing supply commonly identified as the main factors driving rapid house price growth, particularly in urban areas, the government is pursuing a range of measures aimed at boosting supply.

Housing demand and affordability

House price growth has slowed since mid-2016, although it remains positive. According to the Office for National Statistics, nominal house price growth (year-on-year) fell from 8.2 % year-on-year in June 2016 to around 4.8 % for 2017 as a whole. The slowdown has been particularly marked in London, with growth falling from 11.6 % in June 2016 to around 3.2 % in 2017 (year-on-year). Real house price growth has also fallen, from 7 % year-on-year in the first quarter of 2016 to 2.7 % year-on-year in the second quarter of 2017 (Graph 3.2.4). Private housing rental price growth has also fallen (in Great Britain), from 2.6 % year-on-year in January 2016 to 1.2 % year-on-year in December 2017, below the rate of consumer price inflation. These factors point to a weakening of housing demand, despite a mild pick-up in the growth of lending secured on dwellings and the low cost of mortgages. At the same time, price-to-rent and price-to-income ratios continued to point to overvaluation of around 25 % in the housing market at the end of 2016, while a model-based assessment pointed to overvaluation of around 10 % (see Philipponnet and Turrini, 2017).

Graph 3.2.4: Real house price growth (Q1-2007 to Q2-2017)



Source: Eurostat, OECD, Bank for International Settlements, Commission calculations

Forward-looking indicators point to further demand-side weakness in the coming quarters.

Survey data from the Royal Institution of Chartered Surveyors suggest a further softening of demand and house sales across the UK in the coming months, with the ‘New Buyers Enquiries’ indicator remaining in negative territory for most of 2017. These data also show that near-term expectations for prices are negative, particularly for London and other regions in England, although price growth is still expected in most regions over a 12-month period. As discussed in Section 1, Commission forecasts (based on an error-correction model) point to subdued real house price developments between 2017 and 2019.

Despite the slowdown in house price growth, housing affordability in the UK continues to deteriorate.

House price growth has remained higher than wage growth, which has been modest (see Section 1). According to data from the Office for National Statistics, the ratio of median house prices to median annual earnings rose to a new high of 7.7 in 2016, compared to just 3.5 in 1997 and an average of 6.5 in the period 2000 to 2016.

The increase in house prices over the last decade has contributed to a decline in the home ownership rate, particularly among younger age cohorts.

The rate of home ownership fell from 70.9 % in 2003 to 62.9 % in 2015-2016, with a more substantial fall for those aged between 25 and 34. According to the Redfern Review (2016), this decline has been largely driven by three

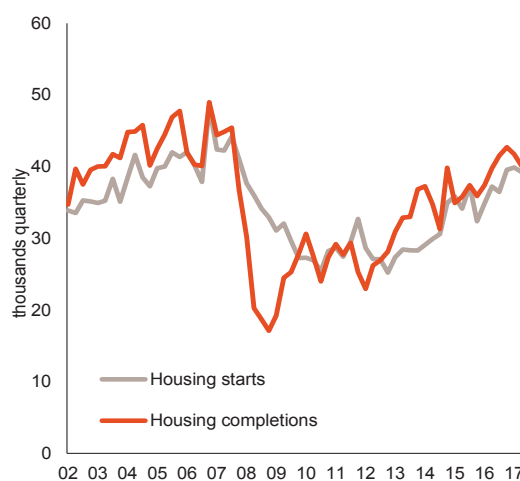
factors: (i) the higher cost of, and restrictions on, mortgage lending for first-time buyers since 2008; (ii) higher real house prices; and (iii) declining relative incomes for younger age cohorts compared to older age cohorts. Declining housing affordability for younger age cohorts reduces those households' ability to accumulate wealth and, as discussed by the Resolution Foundation (2017b), increases intergenerational inequality. According to the same study, households headed by 30 year olds spend a higher proportion of disposable income on housing costs, are more likely to live in overcrowded accommodation, and have longer commute times than previous cohorts.

Deteriorating affordability in the private rental sector is likely to have contributed to an increase in homelessness. According to the National Audit Office (2017a), changes in the affordability of private rental accommodation explains around one fifth of the variation in homelessness across local authority areas in the period between 2012-2013 and 2016-2017. Indeed, according to the same report, the ending of private-sector tenancies has become the single largest driver of homelessness in England. As discussed in Section 3.3, the incidence of homelessness has been on an increasing trend in England.

Housing supply and constraints

Annual housing supply has increased in recent years. After bottoming out in the early part of this decade, housing starts have steadily increased in recent years (Graph 3.2.5) to reach around 168 000 in England in 2016, reflecting a cyclical recovery and the impact of government policy reforms. Net additions to the housing stock, which account for conversions and demolitions, rose to around 217 000 units in England in 2016-2017, compared to around 190 000 in 2015-2016. Indicators of supply were quite strong in the first half of 2017, with housing starts in England rising to 93 310, compared to 84 480 in the first half of 2016. This is in contrast to an overall slowdown in construction output in recent quarters (see Section 3.4).

Graph 3.2.5: Quarterly housing starts and completions (England) (2002-2017)



Source: Department for Communities and Local Government

Despite these increases, new housing supply continues to fall short of estimates of housing needs. Most studies estimate that the housing stock needs to increase by between 200 000 and 300 000 units a year to meet new housing needs (generally measured as estimated household formations) and to address the existing shortfall. For example, the House of Lords (2016) states that '300 000 new homes are needed annually for the foreseeable future' to 'address the housing crisis'.

As discussed in previous country reports, a number of factors contribute to inelastic housing supply. Regulation of the land market is strict and complex, limiting the amount and location of land available for residential development. In particular, there are limits placed on residential development around major urban centres, due to the government's 'green belt' policy aimed at containing urban sprawl. The process of obtaining planning permission is complex and costly, although the government has undertaken a number of initiatives in this area in recent years. Finally, the residential construction sector has become increasingly concentrated, with the high cost of land and complexity of the planning system creating barriers to entry for smaller firms. The dominance of the housebuilding industry by a small number of large firms may limit its ability to adequately respond to high demand for housing by increasing supply. The

building sector also reports that it faces difficulties in securing a sufficient number of skilled workers.

The government's policy response

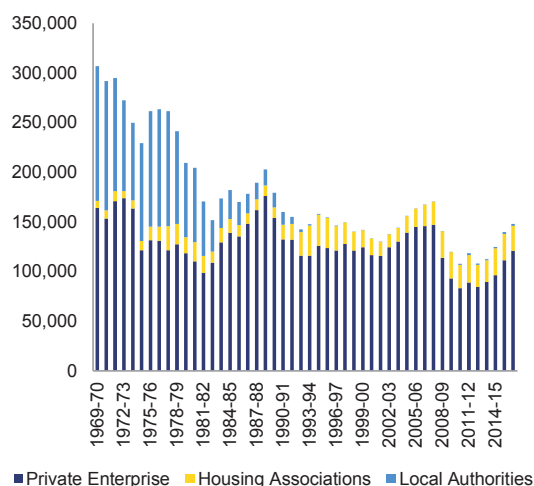
The UK government recognises the problem of insufficient housing supply and has set ambitious objectives for increasing supply in the coming years. As set out in the Department for Communities and Local Government's 'Single Departmental Plan' (2016), the UK government has two broad objectives for the housing market: (i) to drive up housing supply; and (ii) to increase home ownership. It has become increasingly ambitious in its policy objectives, with a commitment to deliver 1 million more homes (net additions) between 2015 and 2020 recently being complemented by the objective of increasing annual supply to 300 000 homes by the mid-2020s.

The government has set out its policy objectives in a white paper entitled 'Fixing Our Broken Housing Market' (February 2017) and announced a range of new measures in its 2017 Autumn Budget. The white paper sets out four broad policy objectives for the housing market. These are: (i) increasing the supply of land available for house building; (ii) accelerating the rate of house completions; (iii) encouraging more diversity in the building industry; and (iv) providing support to people across different tenures, and to prevent homelessness. The measures announced in the 2017 Autumn Budget build on these priorities and include further reforms to the planning system, such as strengthening of central government's powers to direct local authorities to produce a 'local plan' to address local housing needs. Measures also include increased funding for the Housing Infrastructure Fund, which provides funding to local authorities to build housing-related public infrastructure, and the Home Building Fund, which provides financing to private-sector home builders.

Measures adopted by the government in recent years largely seek to incentivise the private sector to build more homes. It is noteworthy, however, that while house building activity by the private sector has broadly followed macroeconomic cyclical trends over the last 50 years, there has not been substantial variation around an average annual output of around 130 000 units. Indeed, during this period, total

house building only approached the government's current target of 300 000 per year when local authorities made a significant contribution, although data do not include conversions.

Graph 3.2.6: House building in England by tenure (1969-2017)



Source: Department of Communities and Local Government

The public sector currently has a limited role in home building. In its 2017 Autumn Budget, the government announced an increase of GBP 1 billion (EUR 1.1 billion) in the 'housing revenue account' borrowing caps and invited local authorities in areas of 'high affordability pressure' to bid for increased caps. This will allow local authorities to build more homes. However, it will have a marginal effect on housing supply, with local authorities constructing an average of around 1 500 homes annually since 2010. Indeed, the public sector has not made a significant contribution to house building since the 1980s (Graph 3.2.6). At the same time, the public sector can undertake an important facilitator role in the development of new housing projects through the roll-out of necessary infrastructure, such as in the Oxford-Milton Keynes-Cambridge corridor project (see Section 3.4). As stated by the National Audit Office (2017b), the European Investment Bank provides funding for development of social housing in the UK through a number of channels, including through funding to housing associations.

Demand-side measures aimed at increasing home ownership may put upward pressure on prices and further reduce affordability for

lower income cohorts. In its 2017 Autumn Budget, the government announced two key measures aimed at increasing home ownership: an extension of the ‘help to buy’ equity loan scheme and an exemption of first-time buyers from stamp duty (subject to several caps). With respect to the ‘help to buy’ equity loan scheme, analysis from the Resolution Foundation (Resolution Foundation, 2017c) shows that price growth of new-build properties has outpaced that of properties sold in the secondary market in recent quarters. This suggests that the scheme may have contributed to more rapid price growth in this segment of the market. Similarly, in its latest economic and fiscal outlook (November 2017), the Office for Budgetary Responsibility states that it expects the stamp duty exemption to increase house prices by around 0.3 %, with most of the effect occurring in 2018. Both schemes may also suffer from elevated deadweight costs as regards their efficiency, with many buyers that benefit from them likely to have purchased homes in the absence of support.

In its white paper, the government confirmed its commitment to maintaining existing protections for the ‘green belt’, thus limiting the possibility of residential construction around existing urban areas. The ‘green belt’ consists of banks of land in which there are additional, specific restrictions on residential development. These areas generally surround urban centres and it is estimated that they cover 13 % of the total land area of England. In its white paper, the government refers to the success of this policy in containing urban sprawl, as well as to achieving wider environmental and societal objectives. At the same time, it has been criticised, including by organisations such as the OECD, for limiting the ability of housing supply to respond to demand and to shifts in the UK’s economic geography. According to Mace et al. (2016), the Metropolitan Green Belt, which surrounds London, has contributed to a housing crisis there by ‘locking up’ developable land, thus forcing development to take place outside of the area covered and increasing commuting times.

3.3. LABOUR MARKET, EDUCATION AND SOCIAL POLICIES

Labour market

While the UK has a good record in creating jobs, there is concern about the quality of some of those jobs, particularly in more atypical forms of work. The UK has a high employment rate (20-64) of 78.2% and an unemployment rate of 4.2%. However, while over 60 % of total employment is full-time and permanent, a large proportion of the employment growth is related to atypical employment such as part-time work, self-employment, including bogus self-employment, and new forms of employment. A particular issue for consideration is the ‘gig economy’, estimated to represent around 1.3 million workers or 4 % of those in employment. The UK Government recently commissioned and published a review of ‘Modern Employment Practices’ and intends to publish a response to the report in 2018.

In-work progression is limited. A recent Social Mobility Commission report notes that ensuring routes to progress in work is especially important for those on lower incomes. Of those low paid in 2006, only 17 % were found to have made a sustained move onto higher wages by 2016 (Social Mobility Commission, 2017). An ongoing propensity for a substantial number of workers to either get stuck on or fail to permanently exit from low wages, points to the need for reforms in adult learning and upskilling more broadly (see below on skills).

Inactivity and part-time work due to care responsibilities remain high for women. In 2016, a large share of inactive (28.1%) and part-time working (40.1%) women were not seeking employment due to them looking after children or incapacitated adults. These figures are among the highest in the EU. This is closely related to the lack of compensated, non-transferable parental leave entitlements for fathers and the insufficient availability of full-time childcare for children under three (see section on childcare provision).

The gender pay gap is relatively high. At 20.9 % in 2015, the unadjusted gender pay gap is among the highest in the EU, which may also partly be a consequence of disrupted careers for women as mentioned above. Women are more likely to be low paid than men and are also far more likely to get stuck on low pay. However, there has been an improvement over the past decades for women

(Social Mobility Commission, 2017). The UK government has introduced mandatory reporting of gender pay gaps for companies with more than 250 employees. The most recent figures show that the gender overall earnings gap in the UK stood at 45 % (2014), while the gender pension gap stood at 34.4 % in 2016.

Disability employment issues have received attention from the government. The disability employment gap in the UK remains large (33.6 pps. vs. the EU average of 25.7 pps., EU-SILC 2015). The UK Government has recently launched a Disability Employment Strategy. Targets include getting a million more disabled people in work by 2027 and providing a more comprehensive offering encompassing welfare, health, local authority and employer initiatives. The new Work and Health Programme to help disabled people into employment commenced in November 2017.

Social dialogue in the UK remains much less structured than in some other EU Member States. Engagement between government, business and unions tends to be ad-hoc and for operational purposes only. For example, as outlined below, business is involved in both the Institute for Apprenticeships and the new National Retraining Scheme, while unions are only involved in the latter.

Skills

Matching jobs to the skills profile of the workforce (i.e. addressing mismatches) and to the needs of particular sectors remains an issue. Business surveys point to skills shortages in certain sectors for both high and low skilled occupations. The European Business Survey responses indicate that about 20-25 % of businesses in the UK require more skilled labour. This is higher than the EU average of about 14 % and risks being further aggravated depending on the future relationship between the EU and the UK and the mobility of skilled EU workers. At the same time, there is evidence that the number of low-skilled jobs on offer in the UK has remained constant while the proportion of low-skilled workers has decreased. This situation suggests that policies to stimulate demand for skilled workers may be needed to complement the supply side measures proposed or underway.

Box 3.3.1: Monitoring performance in light of the European Pillar of Social Rights

The European Pillar of Social Rights, proclaimed on 17 November 2017 by the European Parliament, the Council and the European Commission, sets out 20 principles and rights to benefit citizens in the EU. In light of the legacy of the crisis and changes in our societies driven by population ageing, technological change and new ways of working, the Pillar serves as a compass for a renewed process of convergence towards better working and living conditions.

UNITED KINGDOM		
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24)	On average
	Gender employment gap	On average
	Income quintile ratio (S80/S20)	On average
	At risk of poverty or social exclusion (in %)	On average
	Youth NEET (% of total population aged 15-24)	On average
Dynamic labour markets and fair working conditions	Employment rate (% population aged 20-64)	Best performers
	Unemployment rate (% population aged 15-74)	Better than average
	GDHI per capita growth	On average
Social protection and inclusion	Impact of social transfers (other than pensions) on poverty reduction	Better than average
	Children aged less than 3 years in formal childcare	On average
	Self-reported unmet need for medical care	On average
	Individuals' level of digital skills	Better than average

Member States are classified according to a statistical methodology agreed with the EMCO and SPC Committees. The methodology looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories (from "best performers" to "critical situations"). For instance, a country can be flagged as "better than average" if the level of the indicator is close to EU average but it is improving fast. For methodological details, please consult the draft Joint Employment Report 2018, COM (2017) 674 final. NEET: neither in employment nor in education or training; GDHI: gross disposable household income.

The UK performs adequately on the indicators of the Social Scoreboard¹ supporting the European Pillar of Social Rights. Headline employment and unemployment rates are relatively high. Social transfers (other than pensions) contribute to poverty reduction.

The UK tax benefit system performs relatively well in reducing poverty at present, but is at risk of deteriorating. Social transfers reduced poverty by a considerable 43.4 % in 2016 in the UK. Nevertheless, as discussed in Section 3.3 and previous UK Country Reports, much of the cumulative effect of recent working-age welfare reforms and other cutbacks are expected to take an increasing toll over the next few years, notably in the areas of social protection, minimum income, healthcare, long-term care, childcare and support to children. The latter, in particular, may come under pressure as a result of restricting means-tested support to a maximum of two children, regardless of family size, from April 2017.

¹ The Social Scoreboard is composed of 14 headline indicators, of which 12 are currently used to compare Member States' performance. The indicators "participants in active labour market policies per 100 persons wanting to work" and "compensation of employees per hour worked (in EUR)" are not used due to reservations by Member States. Possible alternatives will be discussed in the relevant Committees. Abbreviation: GDHI – gross disposable household income.

Over a quarter of workers in the UK have only low skills, which holds back labour productivity and job quality (see Section 3.4). Even if the disparity between the employment rates of low, medium and high-skilled workers in the UK was one of the lowest in the EU in 2016, in the context of the Upskilling Pathways Recommendation, upskilling and better utilisation of skills among those in low-skilled jobs could increase productivity, job quality and consequently raise living standards (OECD, 2017). Geographical and sectoral balancing of skills supply with skills demand is a challenge. The high employment rate somewhat obscures the need to develop the skills

and prospects of the current workforce. For example, the UK lacks sufficient skilled ICT professionals.

There is a great deal of devolution of skills policies in the UK. This is particularly the case for Scotland, Wales and Northern Ireland. As in previous country reports, there is little scope to reflect differentiation in this report. Consequently, the text below, unless otherwise indicated, concerns England only.

A number of policies are either in progress or have been announced in relation to skills

challenges. Apprenticeship reform has seen the commencement of both the Apprenticeship Levy and of the Institute for Apprenticeships. The introduction of the levy has coincided with a 59 % drop in apprenticeship starts in the final quarter of the 2016-2017 academic year compared with the same quarter in 2015-2016. This reflects the increased engagement required by employers as a result of the reform. However, it also affects the prospects for the achievement of the statutory target of 3 million apprenticeships starts in England between 2015 and 2020.

Measuring quality of apprenticeships is needed to complement quantity targets. A parliamentary committee report calls for a greater emphasis on outcomes of apprenticeships (House of Commons, 2017a). The report notes the potential difficulty in seeking to satisfy the needs of individual firms, sectors and regional economies while also seeking to use apprenticeships as a means of helping people to achieve social mobility. The recent drop in apprenticeship starts arguably confirms these concerns. Nevertheless, statistics for the 2016-2017 academic year indicated a large increase of 37.4 % in those engaging in ‘higher’ apprenticeships (level 4 and above), albeit from a very low base. These represent around 7.4 % of starts in 2016-2017, up from around 5.3 % of starts in 2015-2016. This could indicate an improvement in the quality of apprenticeships. The age profile of those engaged in apprenticeships remains unusually high compared to other EU countries. The proportion of starts by those aged over 25 is 46.5 % compared to those aged 19-24 at 28.7 % and those aged under 19 at 24.8 %.

The trajectory of the potential impact of apprenticeship policy is at an important juncture. Vital employer engagement is encouraged by the reforms. Smaller employers, who are now required to contribute around 10 % to the costs of an apprenticeship, appear more reluctant to take on apprentices. Some larger employers may also regard the levy as a payroll tax and may be reluctant to recoup this via engagement with apprentices. Conversely, most stakeholders appear to welcome changes from the previous system, which may have incentivised some training providers to encourage apprenticeship starts to maximise their financial return. The limited involvement of trade unions

contrasts with the shared apprenticeship governance seen elsewhere in the EU.

Vocational paths for school leavers are being reformed. The 2017 Spring Budget announced the introduction of T-levels – technical qualifications that 16- to 19-year-olds will be able to take as an alternative to A-levels, the main school leaving qualification. T-levels and apprenticeships offer alternative routes for school leavers. These may be important to improve employment and reduce unemployment and inactivity in younger age groups.

A gap remains in the provision of upskilling/reskilling opportunities outside of T-Levels or apprenticeships. This may particularly be the case for those currently in the workforce and seeking in-work progression. The ‘Unlocking Talent, Fulfilling Potential’ initiative launched in December 2017 seeks to improve social mobility via education, including through lifelong learning.

The November 2017 Industrial Strategy White Paper (see Section 3.4) contained a number of skills announcements. Certain aspects of skills governance structures in England are to be devolved. Local Enterprise Partnerships, Skills Advisory Panels and the devolution of Adult Skills Budgets to some authorities are all intended to address the regional disparity associated with productivity, skills and progression. It is intended that Local Industrial Strategies will be the key outcome of this devolution.

The white paper and the 2017 Autumn Budget also announced a National Retraining Scheme for England. This aims to improve lifelong learning, for those in and out of work. It will be overseen by a National Retraining Partnership, involving the government, employers and unions in a rare example of tripartite cooperation. Career Learning was allocated GBP 40 million (EUR 45.6 million) in the 2017 Spring Budget to set up pilots to test initial approaches that will feed into a National Retraining Scheme. In 2018 the scheme is to use an additional GBP 30 million (EUR 34 million) for particular digital skills needs and GBP 34 million (EUR 39 million) for particular construction skills needs.

Education

There are disparities in educational outcomes across the UK. Students in England and Northern Ireland score above the OECD average, whereas students in Scotland are around the average and students in Wales below it (OECD, 2016). Nevertheless, analysis shows that the gap in England and Scotland between top performers from an economically disadvantaged background and their ‘well off’ peers was equivalent to more than 2 years of schooling on average (Sutton Trust, 2017). The 2015 results for Wales and Scotland in the Programme for International Student Assessment (PISA) show negative trends. Each nation is attempting to reduce performance gaps.

A revised National Funding Formula in England alters the distribution of school funding (DfE, 2017). The intention is to move from allocations at local authority level to a system providing more evenly distributed funding per pupil across all schools. A House of Commons Select Committee is, however, very critical of the funding reforms, challenging the government’s expectation of major efficiency savings (House of Commons, 2017b).

Supply and retention of teachers is a serious constraint on the UK education system. The shortage of teachers is a continuing challenge for the education sector, particularly in certain subjects and regions. In England, a total of 30 000 new teachers per year are needed to maintain supply, but this target has not been achieved for the last 4 years. As concerns retention, a 2016 survey found that the proportion of teachers considering leaving the profession had increased from 17 % in 2015 to 23 % in 2016 (NFER, 2016). The Institute for Fiscal Studies (IFS) estimates that the high number of teachers who leave the profession within 5 years of qualifying is equivalent to GBP 312 million (EUR 356 million) of public expenditure wasted on their initial training (Ward, 2016).

The effectiveness of the teacher supply model is unclear (DfE, 2013). Teacher recruitment targets are not being met both in overall numbers and in particular subject or regional needs. The government has been investing in recruitment and retention of teachers. GBP 75 million (EUR 86 million) over 3 years was made available

through the Teaching and Leadership Innovation Fund⁽¹⁹⁾. However, in England, an investigation by the National Audit Office (NAO) concluded that “the Department for Education cannot demonstrate that its efforts to improve teacher retention and quality are having a positive impact and are value for money” (NAO, 2017c).

Inclusion and widening participation in higher education remains a political priority across the UK. Although young people from disadvantaged backgrounds are now 60 % more likely to participate in higher education than in 2006, there remain challenges to achieving equitable participation and the gap remains large: young people from disadvantaged backgrounds are 2.5 times less likely to attend higher education than the average. The Office for Fair Access has annual access agreements with each higher education institute and, from the 2018-2019 academic year, will agree arrangements with colleges and universities which are proposing a fee rise, so that places can be secured for talented students from disadvantaged backgrounds (OFFA, 2017). In the first results of the Teaching Excellence Framework⁽²⁰⁾ some high-ranking research universities (with the highest tuition fees) did not receive the highest grading for teaching.

Social indicators and policies

Poverty and other social indicators are stable for the UK. Graph 3.3.1 shows a gradual decline in the at-risk-of-poverty-or-social-exclusion rate and its components. Nevertheless, there remains much concern about the cumulative effects of working-age welfare reforms and cutbacks introduced since 2010. The freeze in working-age benefits (including in-work benefits) from 2015 is being implemented in the context of a 3 % inflation rate. This will negatively affect the adequacy of minimum income benefits. The coverage of unemployment benefits is also below the EU average and is falling⁽²¹⁾. The UK at-risk-of-poverty rate after housing costs at 34.8 % in 2016 is among the highest in the EU. The UK has

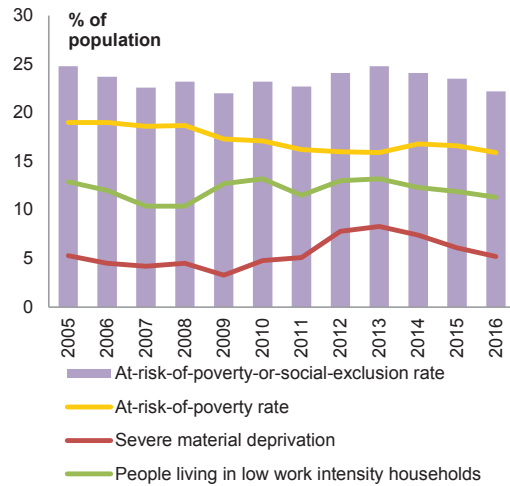
⁽¹⁹⁾ <https://www.gov.uk/guidance/teaching-and-leadership-innovation-fund>

⁽²⁰⁾ <http://www.hefce.ac.uk/lt/tef/>

⁽²¹⁾ According to the benchmarking exercise in the area of unemployment benefits and active labour market policies conducted within the EMCO Committee. See the draft Joint Employment Report 2018 for details.

one of the largest at-risk-of-poverty-or-social-exclusion gaps between people with/without disabilities in the EU (14.6 pps vs. the EU average of 10.1 pps).

Graph 3.3.1: At-risk-of-poverty-or-social-exclusion rate and its components



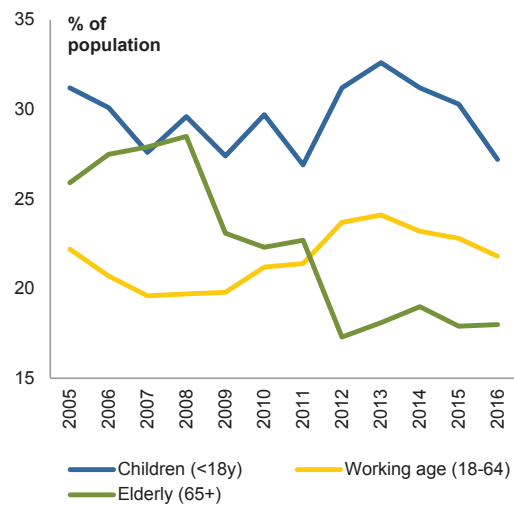
Source: Eurostat

Child poverty is forecast by some to increase due to a restriction of benefits. There is now a curb on means-tested family support to a maximum of two children, which will impact any further children born after April 2017. This is forecast to lead to an increase in child poverty where the intended behavioural impact of the policy does not occur. The IFS forecasts that absolute child poverty (after housing costs, AHC) will rise from 27.5 % in 2014-2015 to 30.3 % in 2021-2022. It also forecasts an increase in absolute poverty (AHC) for children living in working households from 21.4 % in 2014-2015 to 23.3 % in 2021-2022. Absolute poverty (AHC) for all is forecast to fall slightly from 20.3 % to 19.8 % over the same period.

Differences in income growth have stimulated a debate on intergenerational ‘fairness’. The narrowing of the at-risk-of-poverty-or-social-exclusion gap between the elderly, the working-age population and children observed in 2016 (see Graph 3.3.2) is projected to reverse its trajectory up to 2021-2022. The ‘triple-lock’ on pension increases will exacerbate this trend, as the 3 % inflation figure from September 2017 will trigger a commensurate increase in the state pension from

April 2018, while working-age payment rates remain frozen. Furthermore, the income share of older workers (age group 55-64) has increased in the period 2007-2014, while that of the younger cohort (age group 25-39) has decreased. This has been mainly driven by changes in the income per worker in each age group (European Commission, 2017a).

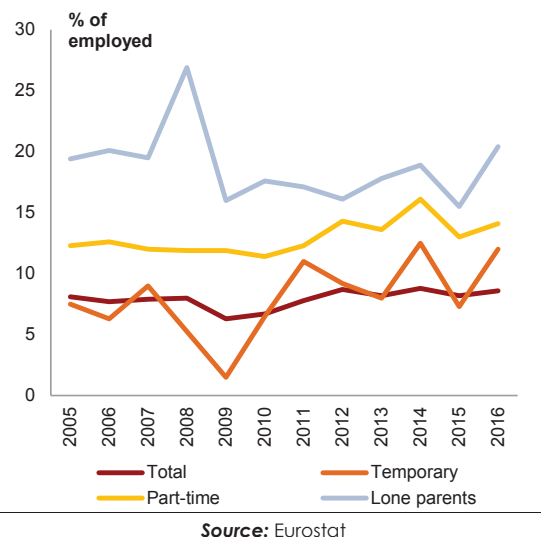
Graph 3.3.2: At-risk-of-poverty-or-social-exclusion rate, age groups



Source: Eurostat

In-work poverty rates are relatively stable at present. However, there are notable differences between disaggregated groups (see Graph 3.3.3). As noted above, the number of children experiencing poverty in working families is projected to increase. The current proportion of children experiencing poverty who are in a family with at least one working adult is projected to remain around 66 %. This is likely to be strongly correlated to work intensity, and thus concerns about low-wages, low-hours or low progression prospects mentioned in this and previous country reports are relevant. As noted in previous country reports, the cut to work allowances in Universal Credit makes the in-work benefit system considerably less generous than the legacy Tax Credits system.

Graph 3.3.3: In-work-poverty rate, groups



Universal Credit roll-out continues. The full roll-out of Universal Credit remains projected to take until 2022. As of 14 December 2017, there were 700 000 claimants of Universal Credit (some 42 % in at least partial employment). Attention has recently been focused on differences with the working-age welfare systems the Universal Credit is designed to supersede. Concerns have been raised about the initial waiting period, the frequency of payment and difficulties for those in receipt of housing support. The 2017 Autumn Budget announced measures including reducing the waiting period from 6 weeks to 5.

Trials of in-work conditionality, which can apply to all working adults in a household, are ongoing. Ultimately, it is hoped that in-work conditionality can address issues of low-work intensity, low-wages and low-hours and also assist with progression. A randomised control trial of 15 000 participants is under way and is expected to report in summer 2018.

Housing affordability remains a concern. Supply issues (see Section 3.2.2) coexist with pressures on social assistance for housing. 12.3 % of the UK population spend over 40 % of their income on housing, which is above the EU average. This rises to 35.4 % for those who rent. In England in 2015, 14 470 households were considered as 'statutorily homeless' (meaning they are considered in 'priority need'), a 6 % increase on 2014 (Feantsa, 2017 overview).

Childcare provision

In 2015, fewer than 30 % of children less than 3 years of age attended formal childcare. The adequacy of supported childcare provision in England has increased since 2016. This is largely thanks to the September 2017 full roll-out of the improved offering of 30 hours of free childcare. However, this is confined to children aged 3 and 4 where all parents are working and is offered for the equivalent of 38 weeks per year. The take-up of the improved offer for 3 and 4 year olds was ahead of expectations, whereas the offer available to the most disadvantaged 2 year olds remains undersubscribed. The Sutton Trust has suggested that a shift in focus away from high quality early years education towards affordable childcare for working families could damage social mobility.

Childcare supply concerns linger. The 2017 Childcare Survey suggests that sufficient supply remains an issue, reporting that half of local authorities in England do not have enough childcare provision for parents working full time. The figures for Scotland (75 %) and Wales (80 %) are worse. The survey indicated prices had remained somewhat steady over the last year. However, at an average of GBP 116 (EUR 132) per week for a part-time (25 hours) place for a child under 2, affordability remains an issue.

Health sector

Overall, access to care is sufficient. The rate of self-reported unmet needs for medical care due to cost, distance and waiting lists (2.8 %) is slightly lower than the EU average (3.2 %). Financial protection is very good with low out-of-pocket spending. However, the UK has striking inequalities in self-reported health by socioeconomic status and most behavioural risk factors are far more prevalent among people with lower income and education. (OECD/European Observatory on Health Systems and Policies, 2017).

Hospitals are working at near-full capacity with low bed numbers, high occupancy rates and short lengths of stay. There are also relatively few doctors and falling numbers of nurses. Together with the lack of integration of health and social care, these factors contribute to the long-standing

challenges of waiting times for elective and emergency care.

The National Health Service has been very reliant on the international recruitment of health workers. It has been estimated that 12 % of NHS staff in England are non-British. About 10 % of doctors and 7 % of nurses working for the NHS are from other EU countries²². Anticipated workforce shortages, restrictions on pay rises for NHS staff and questions about future staffing once the UK leaves the EU are sources of concern.

The healthcare system is currently under financial pressure and projected health care spending challenges the long-term fiscal sustainability of the health care system. Health services are predominantly financed from taxation. In 2015, 80 % of total health expenditure came from public sources (comparable to the EU average of 79 %). Healthcare expenditure is expected to increase by at least 1.4 pps of GDP between 2016 and 2070, due to the ageing population. Based on the projections of the Ageing Report 2018 (forthcoming), this will threaten the medium and long-term fiscal sustainability of the system. In recent years, growth in health spending has not matched the increase in demand for healthcare (see Section 3.1). Official estimates from 2014, based on demand trends at that time and on an assumption of flat real-term funding increases, highlighted that by 2020-2021 there would be a GBP 30 billion (EUR 34 billion) shortfall in NHS funding in England. Subsequently, the government committed to inject extra funds into the health system while the NHS committed to introduce further measures to improve effectiveness and efficiency.

Long-term care is under severe financial pressure affecting access to, levels and quality of publicly funded care. This reflects demographically-driven increases in demand, new cost pressures and cuts to the budgets for local authorities responsible for funding and providing care. Based on the projections of the Ageing Report, above average increases on expenditure on long-term care are projected until 2070.

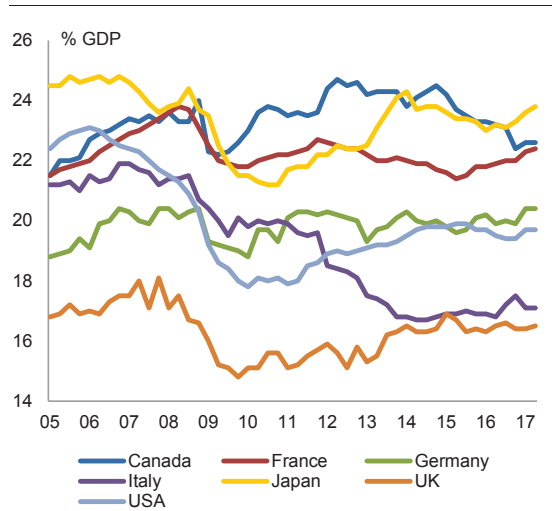
²²According to <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7783>

3.4. INVESTMENT

Investment trends

The UK has long had the lowest investment share in GDP of any G7 nation (Graph 3.4.1). Over the last 20 years, the UK’s average gross-physical-capital-formation-to-GDP ratio of 16.7 % was almost 3ppps lower than the next lowest figure among a group of over 30 advanced EU and non-EU economies (ONS, 2017a). The UK has the lowest average non-government sector investment-to-GDP ratio, along with the second lowest average government sector investment-to-GDP ratio. However, there is evidence that the UK performs better on measures of intangible investment (European Commission, 2017c). Box 3.4.2 summarises UK investment trends and sets out the principal barriers to higher investment.

Graph 3.4.1: Investment shares in G7 nations, quarterly data

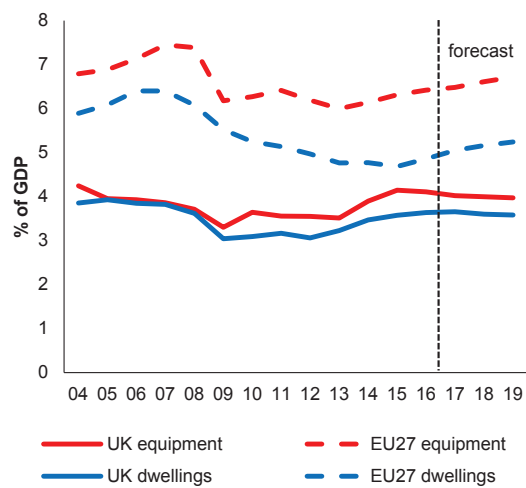


Source: OECD

Private investment remains well below the EU average, particularly in equipment. After recovering from a trough in the financial crisis, as set out in Section 1, private investment growth has stalled since 2015 and is projected to remain subdued in the UK, in contrast with a robust

European and global picture. Low equipment investment (Graph 3.4.2) is only partially accounted for by the relatively small weight of capital-intensive production industries in UK GDP, as within specific sectors fixed investment by UK firms is also relatively low. As set out in Section 3.2, the government aims to facilitate increased dwellings investment to address the chronic housing shortage. Housebuilding continues to grow, although the recovery in the broader construction sector lost momentum in 2017.

Graph 3.4.2: Equipment and dwellings investment share in the UK and the EU-27



Source: European Commission

Public capital expenditure has risen somewhat in the last 2 years. Total public sector net investment is projected to remain at around 2.0 % of GDP until 2019-2020. Since 2010, the government has increasingly focused public sector net investment on economic infrastructure, especially transport, while it has reduced the proportion spent on public services such as education and healthcare. Public sector construction rose in 2017, but it is set to fall slightly in 2018 before picking up again.

Box 3.4.1: Policy highlights: Making infrastructure policy more coherent and long term

The government has recently created two agencies to provide a more stable and long-term framework for infrastructure investment. As discussed in Section 3, the UK requires major investment to meet current and projected future demand for housing and infrastructure, but there are currently shortcomings in infrastructure planning and implementation. The Infrastructure and Projects Authority (IPA), established in 2015, is in charge of monitoring projects and helping to deliver them. The National Infrastructure Commission (NIC) is an independent body established in 2016 to conduct long-term infrastructure planning, for the economy as a whole and for selected key projects. The government has asked the NIC to assume that annual government spending on economic infrastructure will be 1.0-1.2 % of GDP between 2020 and 2050, a slight increase on current levels.

The infrastructure pipeline suggests that annual investment should grow substantially over the next decade. The IPA's December 2017 National Infrastructure and Construction Pipeline (IPA, 2017) provided an update on the delivery of the National Infrastructure Delivery Plan 2016-2021. The plan sets out a pipeline of over GBP 460 billion (EUR 525 billion) of planned public and private investment projects across the economy, of which GBP 240 billion (EUR 274 billion) is expected to be invested by 2021. The main components of the pipeline by value are energy generation, utilities, transport and social infrastructure. Over 45 % of the value of the pipeline requires private funding. Of this private funding, 40 % relates to privatised utilities subject to economic regulation. The IPA projects total infrastructure investment over the next decade at GBP 600 billion (EUR 685 billion). This implies that the total infrastructure investment required in the five-year period 2021-2022 to 2026-2027 will be almost 50 % higher than what is on course to be delivered in the preceding 5 years (2016-2017 to 2020-2021).

In October 2017, the NIC published its interim assessment of national infrastructure priorities over the longer term (NIC, 2017a). The interim assessment is a 'visions and priorities' document that sets out the key objectives for the UK's infrastructure networks between now and 2050. It sets out the challenges to deliver investment in new, upgraded and replacement infrastructure, and outlines current weaknesses in infrastructure planning that need to be overcome. The interim assessment is a precursor to the first full National Infrastructure Assessment in 2018. The NIC has also emphasised the importance of the effective use of digital technologies for maximising the performance of existing infrastructure. This includes, for example, demand management systems in transport and energy networks, and the use of digital signalling and sensors to increase the capacity of road and rail networks.

The NIC also has a facilitator role. In the Oxford-Milton Keynes-Cambridge corridor project (NIC, 2017b), which includes both a new railway line and housing developments, it has helped to bring the interested parties together. This is a positive example that could act as a pilot to support the government's focus on city-regions, and on connecting homes and jobs.

Infrastructure investment

The UK faces significant challenges to deliver modern network infrastructure with sufficient capacity to meet future demand. As discussed in Section 3.5, road congestion is high and rail capacity is increasingly inadequate in places in the face of rapidly growing demand. There is also an increasingly urgent need for higher investment in new energy generation and supply capacity. While

many firms are positive about the government's infrastructure policy approach over the last five years, only 30 % are satisfied with the pace of delivery and almost three quarters doubt that overall infrastructure will improve by 2022 (CBI/AECOM, 2017). As discussed in Box 3.4.1, the government has established new agencies that aim to improve the coherence of infrastructure policy making, and support longer-term planning.

The government is prioritising public infrastructure investment, although it is not clear if this will prove adequate. In countries that do not have excess capacity, network infrastructure spending (construction and maintenance) tends to have particularly strong positive impacts on demand in the short term and on productivity in the longer term (OECD, 2016). Given the scale of the challenge and the potential benefits, including the complementarity between public and business investment, there is a strong case for increased public investment spending in the UK. The ‘National Productivity Investment Fund’ (NPIF) will provide a total of GBP 31 billion (EUR 35 billion) of funding for infrastructure, housing and R&D between 2017-2018 and 2022-2023, with a planned focus on regional growth, including improvements to infrastructure needed to support housing development. The European Investment Bank (EIB) has also had an important role in funding UK projects, particularly in infrastructure. The EIB lent EUR 6.93 billion (GBP 6.07 billion) to UK projects in 2016 and EUR 1.84 billion (GBP 1.61 billion) in 2017.

Recent analysis has identified scope for improving the economic returns from infrastructure investment on both the cost and benefit sides. The unit cost of building and maintaining infrastructure is often particularly high in the UK. The UK government acknowledges this and has set out plans to improve the effectiveness of infrastructure spending (IPA, 2017b). The UK is systematic in its use of cost benefit analysis in infrastructure projects, particularly in transport, but there remains scope for improvement in planning and implementation (Institute for Government, 2017a). An analysis of the government’s management of six major projects, (Institute for Government 2017b) concluded that serious problems persist with: (i) comprehensive planning of infrastructure on a national basis; (ii) considering options at an early stage; (iii) modelling risks and costs; (iv) ensuring appropriate project and risk management capability within government; and (v) mustering the political will to address the issue of ‘concentrated losers’. If successful, the increased policy focus on joining up different aspects of infrastructure, including transport and housing, could deliver higher future returns from transport investment than those captured in the core results of a cost benefit analysis.

The increased private financing envisaged by the IPA (Box 3.4.1) is not straightforward for new transport infrastructure. It is important to carefully assess the feasibility and desirability of delivering transport infrastructure with private capital on a project-by-project basis. The government has broadened the UK Guarantees scheme to allow construction guarantees. Although to date only GBP 4 billion (EUR 4.6 billion) of guarantees have been signed under this scheme compared to a capacity of up to GBP 40 billion (EUR 46 billion), the government sees its added value as being as much about providing expertise and coordination as money. The government sees the potential to increase the currently limited use of private finance for economic infrastructure, while emphasising it needs to be careful to avoid repeating past mistakes, in particular where alternative approaches may have delivered lower full life costs (NAO, 2017d). The scope for pension funds to invest in the construction phase of projects is limited by their risk aversion and financial regulations. For new public-private partnership projects, the government plans to publish the forecasted and actual rates of return annually, hence allowing a comparison between the expected and actual performance of projects.

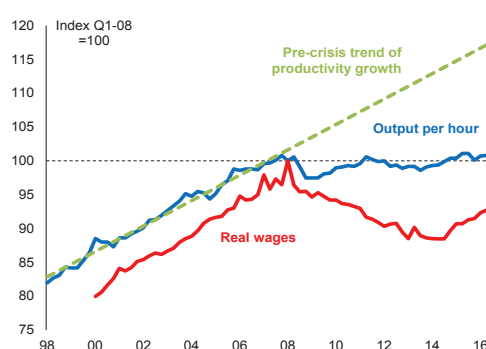
Productivity

UK productivity is significantly below the G7 average. The UK is an open economy with a high employment rate and many positive aspects to its business environment which should tend to support hiring, investment and productivity. The UK also has comparatively low levels of regulation in product and labour markets, a high-quality public administration, deep capital markets, strong universities and a high stock of FDI. However, UK output per hour is 15 % below the G7 average, and more than 20 % below what workers in France, Germany and the United States produce.

Labour productivity is no higher than it was a decade ago, and real wages remain well below their pre-crisis peak (see Graph 3.4.3). In the decade before the financial crisis the UK was catching up with the G7 average. However, more recently it has fallen further behind. In 2017-Q3 output per hour was only 1 % higher than it was a decade ago (ONS, 2017b). By 2016, the UK’s “productivity puzzle” — the difference between the current level of labour productivity and what it

would have been if the pre-downturn productivity trend had continued — was 15.8 %, the largest in the G7 (ONS, 2017c). The reasons for this shortfall were discussed in the 2016 country report. Since 2010, a combination of strong employment growth and subdued investment has resulted in a falling stock of capital per worker employed (ONS, 2017d).

Graph 3.4.3: **Recent trends in UK labour productivity and real wages**



Source: ONS and European Commission

Most of the productivity slowdown occurred within sectors, although there has also been a shift in employment away from high-productivity sectors such as financial services, and oil and gas. Half of the within-sector productivity shortfall is accounted for by non-financial services (with IT and communications being the largest contributor), a quarter by financial services, and another quarter by manufacturing, other production and construction (Kierzenkowski et al, 2017a). The OECD recommended that for most regions there should be more government focus on improving the performance of service sectors that have a large weight in the economy, such as ICT and other knowledge-intensive services (OECD, 2017).

Medium-term prospects for productivity look subdued. Since 2010, the OBR had, like other forecasters, been consistently overoptimistic on UK productivity by predicting an imminent return to close to pre-crisis growth rates. It is now clear that the lower post-crisis level and growth of productivity is mainly structural rather than cyclical. In its November 2017 Economic and Fiscal Outlook the OBR sharply downgraded its forecast for medium-term UK productivity growth, by an average of 0.7 pps. to between 0.9 % and

1.2 % per year until 2023 (OBR, 2017c). As a result the OBR expect that by the beginning of 2023 output per hour will be 27 % below an extrapolation of the pre-crisis trend.

On 27 November 2017 the government released an Industrial Strategy White Paper (BEIS, 2017a). The white paper set out plans to address the UK’s weak overall productivity performance and to consolidate or develop sectoral strengths. The paper focused on five ‘foundations of productivity’ — ideas, people, infrastructure, business environment and places. It also identified four ‘grand challenges’ — artificial intelligence, clean growth, ageing society and the future of mobility. In line with other recent reports on the UK productivity challenge, it put a major focus on addressing broad-based underperformance across sectors, firms and places, as well as supporting innovation and pockets of excellence. The four ‘sector deals’ announced in the paper — artificial intelligence, automotive, construction, life sciences — reflect this balance.

The UK has pockets of excellence, but a wide dispersion of firm-level performance. The UK has many high-performing sectors and firms, which are well integrated into global value chains. The UK’s sectoral strengths are focused in areas where intangible assets are especially important, for example pharmaceuticals, higher education and financial and professional services. Among manufacturing firms, average output per worker and management practices are both considerably higher in multinationals than domestic firms, with productivity lowest in firms with family ownership and management (ONS, 2017e). After adjusting for size, industry and other factors, firms with inward FDI are 75 % more productive than non-FDI firms (ONS, 2017f). The gap in service productivity between high and low-performing firms is 50 % larger in the UK than other advanced economies and has been widening over time (Haldane, 2017).

The UK has a long tail of poor performance, with much of the economy operating far from the productivity frontier. Across large parts of the economy, the UK has long lagged behind its main competitors on the main drivers of productivity — skills, investment and the adoption and implementation of efficient business processes. A combination of patchy management,

low equipment and R&D spending, and gaps in workforce skills hold back innovation and its diffusion, particularly in domestic firms (OECD, 2017). The Confederation of British Industry (CBI) recently emphasised the need for a public policy focus on promoting the more consistent and appropriate diffusion of existing technology and business best practice (CBI, 2017). For example, across UK manufacturing as a whole, the density of industrial robots is one of the lowest in the OECD (IFR, 2016), while the proportion of UK businesses using technologies such as electronic information sharing (19 %) and radio-frequency identification (7.7 %) are among the lowest in the EU (European Commission, 2017d). The business-led Productivity Council focuses on improving business-to-business engagement, supported by government funding.

Productivity is also held down by impediments to the efficient allocation of capital and labour.

Since the financial crisis, flows of labour and capital between companies have been unusually low, and the dispersion in rates of return between sectors has been high (Haldane, 2017). This may be partly caused by ‘zombie firms’, which have poor performance and prospects but have been able to continue to operate and to tie up capital and resources. However, the number of such firms is not especially high in the UK (Adalet McGowan et al, 2017). Higher financing costs may lead to a more rapid exit from the market among the least productive and least profitable firms.

The housing shortage (discussed in Section 3.2) is part of the problem.

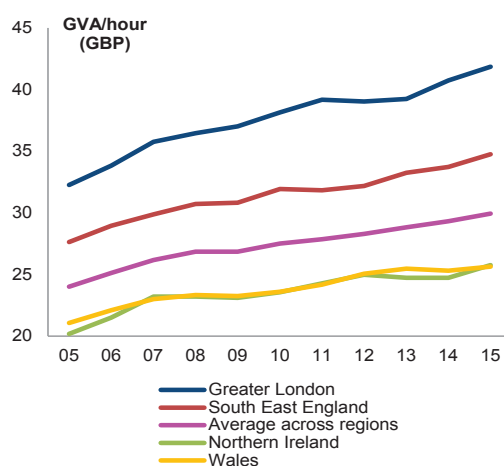
The OECD emphasises the importance of relaxing barriers to housing supply so as to improve resource allocation, and specifically to allow cities to grow in an organic way (OECD, 2017). Despite its much higher productivity, in terms of household disposable income after housing costs London is only at the national average (Resolution Foundation, 2017d).

The UK also has large regional disparities in productivity, with low levels outside London and South East England (Graph 3.4.4).

Out of 15 UK metropolitan areas, 11 have a lower productivity than the average metropolitan area in the OECD (OECD, 2017). In contrast, London has a congestion and costs issue to address to cement its status as a leading global economic hub. The

OECD found that overall regional investment ratios appear weakly linked to productivity, with the sectoral composition of regions and their type of investment more important (Kierzenkowski et al., 2017b).

Graph 3.4.4: **Regional disparities in nominal labour productivity**



Source: ONS

Regional differences in R&D spending are also large.

Overall UK R&D spending is below the EU average (see Section 3.5). R&D intensity in the East of England is similar to levels in Sweden at 3.5 % of GDP, with South East England at 2.4 %. By contrast, North East England, London⁽²³⁾ and Yorkshire and the Humber invest only around 1-1.1 % of their GDP in R&D.

The government seeks to make investment and growth policy in city regions more coherent.

To date there is little sign of low-performing regions converging with London and South East England. Boosting relatively low living standards in these regions (see Section 3.3) will require addressing deficiencies in human and physical capital and capturing potential agglomeration benefits within and across city regions, including through improved transport connectivity (see Section 3.5). The government recognises this will require both higher infrastructure investment outside London and an improvement in the returns from that investment through better coordination between both transport and housing policy, and different layers of government and the private sector.

⁽²³⁾ The low R&D intensity in London is the result of the importance of high-productivity services in its economy.

Box 3.4.2: Investment challenges and reforms in the United Kingdom

Macroeconomic perspective

Total physical investment in the UK (measured as gross fixed capital formation) fell significantly during the crisis, with a sharp fall in private investment only partially offset by a temporary increase in public investment. Public investment is marginally below the EU average (see Section 3.4) and there are shortcomings in transport infrastructure (see Section 3.5). Private investment is significantly below the EU average, despite a robust recovery from a post-crisis trough. Equipment investment is particularly low, which is only partly related to the UK's specialisation in services. Relatively low housebuilding has contributed to the UK's housing shortage (see Section 3.2). Heightened uncertainty is currently weighing on investment, and this is set to persist (see Section 1).

Assessment of barriers to investment and ongoing reforms

Public administration/ Business environment	Regulatory/ administrative burden		Financial Sector / Taxation	Taxation		
	Public administration			Access to finance		
	Public procurement /PPPs			R&D&I	Cooperation btw academia, research and business	
	Judicial system				Financing of R&D&I	
	Insolvency framework			Sector specific regulation	Business services / Regulated professions	
	Competition and regulatory framework				Retail	
Labour market/ Education	EPL & framework for labour contracts		Construction		CSR	
	Wages & wage setting		Digital Economy / Telecom			
	Education	CSR	Energy			
			Transport			

Legend:

	No barrier to investment identified		Some progress
CSR	Investment barriers that are also subject to a CSR		Substantial progress
	No progress		Fully addressed
	Limited progress		

Overall barriers to private investment in the UK are moderate, as confirmed by the European Commission's assessment. Relevant reforms have been adopted on spatial planning and technical skills, but effective implementation is challenging and structural problems remain.

Main barriers to investment and priority actions underway

1. Spatial planning regulations: Regulation of the land market, particularly of residential construction, is strict and complex (see Section 3.2). The process of obtaining planning permission is often lengthy, complex, uncertain and costly. Limits on the scope for development, particularly around poles of economic growth, have led to an undersupply of housing and very high prices of non-agricultural land. Expensive land and the complex planning system contribute to the tendency for infrastructure projects to take longer and cost more than in other European countries (see Section 3.4). Planning restrictions can also hinder the use of modern, efficient commercial buildings and equipment. Substantial ongoing reforms to the planning system should help to facilitate increased development but may not prove sufficient.

2. Technical skills: While the UK has a strong higher education system, there are weaknesses in both technical and basic skills (see Section 3.3) which contribute to the UK's weak productivity performance. More specifically, skills shortages are often most acute in occupations linked closely to investment, such as engineers, tradespeople and construction workers. The UK is implementing a programme to expand and reform the apprenticeship system. The government intends to add responsibilities to the new Institute for Apprenticeships by expanding its remit and renaming it the Institute for Apprenticeships and Technical Education from April 2018. This, and wider plans to address skills issues set out in the new Post-16 Skills Plan, are ambitious in intention and will require coherent, committed and timely implementation.

3.5. SECTORAL POLICIES

Transport infrastructure

The UK's road, rail and aviation networks have significant and growing capacity pressures. Relative to population, the UK's road and rail networks are less dense than the EU average (European Commission, 2017e). In terms of higher capacity routes — motorways and electrified rail — the UK has fallen further behind the EU average since the mid-1990s (*ibid.*). At the same time, demand and congestion have been rising, corresponding to longer commutes (Trade Union Congress, 2017). The NIC projects that, by 2050, road use in Great Britain could grow by 37-61 % and rail use by 12-43 % (NIC, 2017a). Rail freight has the potential to nearly double by 2030 if allowed to grow unconstrained (DfT, 2014).

There are challenges to both increase transport investment and improve its targeting and efficiency. As set out in Section 3.4, high congestion and relatively underdeveloped public transport networks are factors contributing to the low labour productivity in many parts of the UK. Improved transport networks could therefore help to improve economic performance. Over 85 % of transport investment is publicly funded (IPA, 2017), and historically the UK has had relatively low rates of public investment in transport infrastructure. The government recognises the scale of the challenge, and is increasing spending on new projects and improvements, particularly in rail. As discussed in Section 3.4, there is scope to improve project selection and the cost effectiveness of transport investment.

Current investment focuses on London and major inter-city projects. Almost 30 % of public transport infrastructure investment is on projects in London. This makes it the region with the highest per capita spending (HM Treasury, 2017b). The government has stated that there should be a better geographical balance in future. There has been a tendency to prioritise large and high-profile construction projects over smaller improvements, renewals and ongoing maintenance that may have superior benefit to cost ratios (DfT, 2017a). In the coming years a large proportion of the rail budget is also committed to a few large projects, in particular 'High Speed 2' (see below). The government now plans to focus more on smaller schemes that deliver quickly at lower risk (*ibid.*).

Low transport infrastructure investment outside the south of England may have held back agglomeration effects (OECD, 2017) (see Section 3.4). The 'Northern Powerhouse Strategy' (HM Treasury, 2016b) set out insufficient transport connectivity as one of the barriers holding back productivity in the north of England relative to the south. In most of the major UK conurbations outside London, over 70 % of journeys to work are made by car despite growing road congestion (in London only 30 % are by car). This is a much higher proportion than in most comparable cities across Europe (EMTA, 2017), and reflects poor public transport availability. For the next few years the government has only committed a modest amount of additional funding to urban transport projects. There are growing calls for significantly higher investment in urban transport and associated infrastructure outside London in order to improve intra-city linkages between people and jobs (Transport for the North, 2018). The government has also given a commitment that in future central government decision making will take account of the views and plans of sub-national transport bodies (DfT, 2017a). The growing number of combined authorities — covering multiple local authorities within a city or region — have been given new powers to borrow to fund infrastructure projects (NAO, 2017e).

Road transport

In recent years road congestion has been increasing within nearly all major cities (NIC, 2017a, p.74). The UK was among the most congested developed countries in the world in 2016, with traffic congestion costing drivers over GBP 37 billion (EUR 42 billion) (INRIX, 2018). Since 1993 road traffic has grown by 23 % while the length of the network has only increased by 3 %. In the longer term, continued traffic growth could lead to severe congestion spreading across the arterial roads of the strategic road network (SRN) (DfT, 2017a).

The government is in the process of setting its post-2020 road investment priorities. Highways England now manages the SRN in England, which carries a third of road traffic on 2 % of the total road length. The UK is mid-way through the first Roads Investment Strategy (RIS), covering 2015-2020, which has focused on tackling a backlog of

projects needed to address notorious bottlenecks. In developing the second RIS, covering the period from 2020-2025, the government is seeking to ‘address long standing under investment in the SRN’ and has highlighted the need to improve road links to ports and airports.

Central funding is being increased but cuts to local funding threaten maintenance. Overall spending on road maintenance has dropped significantly since the financial crisis and there is evidence of aggregate under-investment (RAC Foundation, 2017). While central transport infrastructure funding has been prioritised, local authorities are under severe financial pressures. Given that maintenance spending often has a very high return, estimated to average GBP 13 for every GBP 1 spent (DfT, 2015) this pattern is not efficient in aggregate. The government is consulting on introducing an intermediate designation of ‘Major Road Network’ to ensure that maintenance and enhancement of locally managed A-roads is not neglected.

Rail transport

There is continued growth in demand across intercity, commuter and freight services. Passenger rail traffic per capita has increased more rapidly than in most other EU countries in the last 20 years but the overall density of the rail network remains comparatively low. As a result, passenger traffic per km of rail line has almost doubled, but progress in extending electrification — currently at 34 % of the network — has been modest (DfT, 2017b). In the past few years the effects of growing pressure on the network have become increasingly apparent, though there are indications that passenger growth has recently slowed. The effects of any disruption are magnified when ageing infrastructure is operating at full capacity (DfT, 2017c). Overcrowding during peak times in London increased by 45 % from 2011 to 2016 (DfT, 2017d). Punctuality has also dropped across the network as a whole (ORR, 2017).

A number of major projects are being delivered, although some planned projects have recently been delayed or cancelled. ‘Crossrail’ is a new rail line linking east and west London and the surrounding area. The central tunnel is due to open in 2018 with services fully operating by December 2019. A number of large contracts have

recently been signed for construction of the first phase of ‘High Speed 2’ between London and Birmingham. In the current Rail Control Period 5 (CP5), covering 2015-2019, the government committed itself to more projects than could be delivered with the resources and time available. As a result, a number of planned schemes have been scaled back, and some lines will no longer be fully electrified. Due to cost overruns, GBP 3.4 billion (EUR 3.9 billion) of renewals are likely to be pushed beyond 2020.

In November 2017, the government published its strategic vision for rail (DfT, 2017e). There have been problems in the incentives and collaboration between Network Rail, which manages rail infrastructure, and the train operating companies. To address this, the government has announced plans to roll out joint teams running day to day train and track operations. The Government is developing its proposals for Rail CP6 (covering 2019-2024) and has announced that GBP 47.9 billion (EUR 54.7 billion) will be available for rail infrastructure spending. GBP 34.7 billion (EUR 39.6 billion) will be provided as government grants, with the remainder coming from track access charges and commercial income. While a high degree of pre-commitment of funds has somewhat limited the room for manoeuvre in CP6, the government has also announced plans to reopen a number of lines that were closed in the 1960s. In the longer term, network improvements may focus more on improving intra-urban connectivity outside London, as discussed above. The government is seeking to continue to shift the cost of funding rail infrastructure from taxpayers to passengers. Ticket prices are already high and passengers’ stated top priority for improving the railways is the value for money of tickets (Transport Focus, 2017).

Aviation

The government’s preferred scheme for additional airport capacity is a new north-west runway at Heathrow Airport. Additional runway capacity in the south-east of England is needed if London is to maintain its status as an international aviation hub and meet growing domestic demand. The government has consulted on a draft Airports National Policy Statement. However, there are many political, regulatory and environmental processes and concerns that will need to be

addressed before the development of any new runway.

Telecommunications networks

There is a substantial gap in superfast broadband availability between urban and rural areas. The UK already has superfast broadband ($\geq 30\text{Mbit/s}$) available to the vast majority of premises. However, as of November 2016, two-thirds (67 %) of rural connections received an average speed of less than 10Mbit/s, compared to 24 % of urban connections (Ofcom, 2017a). In May 2017, around 3 % of UK premises (840 000) had access to ‘full fibre’ services, which offer download speeds of between 250 Mbit/s and 1 Gbit/s (Ofcom, 2017b).

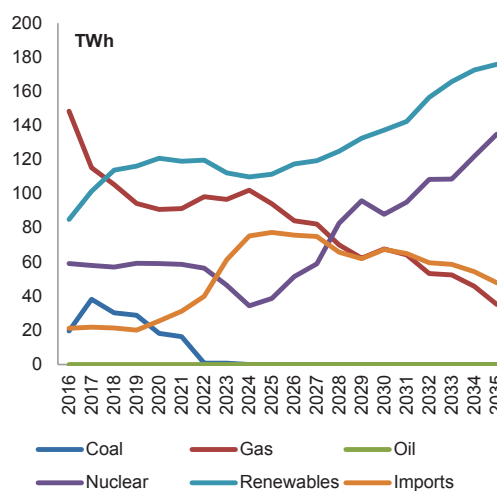
On 1 March 2017, the UK Government published an umbrella strategy to support digitalisation. This set out the aim to complete the roll-out of 4G and superfast broadband and to implement a broadband universal service obligation (USO) by 2020 (DCMS, 2017). It also reconfirmed a GBP 1 billion (EUR 1.14 billion) investment program in full fibre and 5G. The government will invest up to GBP 400 million (EUR 456 million) into the Digital Infrastructure Investment Fund (launched in July 2017) over four years to support an at least equivalent amount of commercial financing for fibre investment. Investment in full fibre is also being supported by 100 % business rates relief on new full-fibre infrastructure for a five year period from April 2017. In December 2017, the government confirmed that it will use a regulatory USO to give every household and business in the UK the right to request a broadband connection with speeds of at least 10 Mbit/s by 2020. As set out in Section 3.4, the NIC has emphasised the potential for digital infrastructure to improve the performance of UK transport networks.

Energy infrastructure

Substantial investment is needed to gradually reduce the share of fossil fuels in the energy supply mix, increase efficiency, and reduce emissions. As shown in Graph 3.5.1, the UK authorities anticipate a significant shift in the UK’s electricity supply mix over time. This is in addition to any replacement and maintenance of ageing existing capacity. Winter 2017-2018 is the first

time the capacity market is in operation. Following a competitive process, the capacity market pays providers in return for a commitment to provide reliable sources of electricity to maintain system reliability when needed. The IPA project an acceleration of energy infrastructure investment from a total of GBP 57 billion (EUR 65 billion) over the next 4 years to a total of GBP 134 billion (EUR 153 billion) in the subsequent six years (IPA, 2017). The government plays an important role in managing the complex regulation of the energy sector. While only 42 % of infrastructure providers surveyed in summer 2017 expressed confidence in the ability of current government policy to improve UK energy infrastructure, this is a sharp 30 pps improvement from a year before and reflects a fall in policy uncertainty (CBI/AECOM, 2017).

Graph 3.5.1: Projected electricity generation by source



Source: Department for Business, Energy & Industrial Strategy

The cost of new offshore wind capacity has fallen sharply. The main form of government support for low carbon energy is now the ‘Contracts for Difference’ (CfD) scheme introduced in 2014. If an agreed ‘strike price’ is higher than the market price, the counterparty must pay the renewable generator the difference between the two prices. In the opposite case, the renewable generator must pay back the difference. Most contracts are awarded through a competitive bidding process open to specified technologies for a period of 15 years. In September 2017, for projects delivering in 2022/23, the second CfD allocation round set a strike price less than half the

average price awarded to offshore schemes in a 2015 auction. The falling cost of intermittent wind power could enhance the case for investing in storage in the future. Feed-in tariffs were introduced in 2010 and remain in place for generators of below 5MW.

The cost-effectiveness of new nuclear capacity is uncertain. In September 2016, contracts were signed with energy company EDF for a GBP 18 billion (EUR 20.5 billion) nuclear power plant — Hinkley Point C — which will provide 7 % of the UK’s electricity needs. The NAO has published a report on Hinkley Point C which was critical of the high costs and risks that the project will impose on consumers, and questioned its overall value for money (NAO, 2017f). As shown in Graph 3.5.1, the government envisages the construction of substantial new nuclear generating capacity over the next 15-20 years. The government has not re-evaluated its strategic case for nuclear power since 2008. However, as set out in the 2017 Industrial Strategy White Paper (see Section 3.4), government-industry discussions are ongoing regarding how substantial cost reductions can be achieved in respect of nuclear new build. The UK government is also taking steps to foster the development of small modular.

Projects in the planning phase could raise Great Britain’s currently low level of electricity interconnection. The UK currently has an interconnection level of about 6 % of installed generating capacity ⁽²⁴⁾. This is expected to increase to 8 % by 2020, still below the target of 10 %. The Great Britain market (i.e. England, Wales and Scotland) has low levels of interconnection with the rest of Europe. By contrast, the Northern Irish electricity market is fully integrated with the Republic of Ireland (see the Ireland country report). New rules on the Integrated Single Electricity Market are scheduled to enter into force in May 2018. This is expected to facilitate the transition to a low-carbon energy sector in a more competitive market environment. Some 11 new interconnectors are currently in various planning phases since the UK undertook a policy to actively promote interconnection and Ofgem, the energy regulator, launched the ‘cap and floor’ regulatory regime in 2014. Out of these,

the projects under construction ⁽²⁵⁾ are anticipated to be completed by the early 2020s and to more than double Great Britain’s interconnected capacity. The projected growth of net electricity imports shown in Graph 3.5.1 is linked to this extra capacity.

The UK power generation sector has a much lower level of concentration than the EU average due to the UK’s early moves to liberalise its energy markets. However, wholesale prices are above the EU average (56.1 vs. 40.6 EUR/MWh), which is linked to; (i) the UK’s high dependence on natural gas; (ii) an ageing generation fleet; (iii) the small size of the British market compared to the interconnected continental European market; and (iv) the Carbon Price Floor. The planned higher levels of interconnection should help bring wholesale prices down in the future.

In October 2017, the government published draft legislation to place a temporary price cap for domestic customers on expensive standard variable tariffs and default tariffs. Around two-thirds of domestic energy consumers are currently on these tariffs. The proposed legislation would result in a cap on energy prices which would run until the end of 2020 and possibly be extended to 2023. In July 2017, Ofgem announced plans to protect vulnerable consumers through a safeguard tariff (Ofgem, 2017a). Ofgem is also continuing with its switching programme (Ofgem, 2017b) to make it easier for consumers to switch supplier or tariff to try to ensure that all consumers have better access to cheaper energy deals. The six largest electricity and gas suppliers still dominate the market, though their combined market share fell from over 90 % in 2012 to approximately 80 % in 2017, particularly as a result of new small- and medium-sized suppliers entering the market.

Climate, energy and environment

The UK is currently on track to meet its Europe 2020 target for greenhouse gas emissions not covered by the EU Emissions Trading Scheme (ETS). According to approximated data, in 2016 UK greenhouse gas emissions were 22 % below

⁽²⁴⁾ 11 January 2017, 19:00 pm from ENTSO-E Winter Outlook 2016/2017.

⁽²⁵⁾ These are Eleclink (1GW to France); Nemo Link (1GW to Belgium); North Sea Link (1.4GW to Norway) and IFA2 (1GW to France).

2005 levels. Projections based on existing measures indicate that emissions from non-ETS sectors will be 26 % below 2005 levels by 2020, over-achieving the 16 % target under Europe 2020. In October 2017, the UK government published the Clean Growth Strategy (HM Government, 2017), which sets out a set of policies and proposals to deliver increased economic growth and decreased emissions throughout the next decade.

The UK met interim targets but still has a challenge to meet its 2020 renewable energy target of 15 %. The share of renewable energy is estimated to have reached 9.3 % in 2016. This put the UK above its 2015-2016 interim indicative target (7.47 %), though the trajectory to reach the 2020 target remains challenging. There are encouraging levels of growth in the renewable electricity sector, which in 2016 reached 25 % of electricity generation (HM Government, 2017). Around 75 % of new electricity generation capacity added since 2010 uses renewable energy sources (BEIS, 2017b).

The UK should continue its efforts on energy efficiency to meet its indicative 2020 targets. Between 2005 and 2016, the UK achieved a significant decrease in the levels of both primary energy consumption (down by 18 %, to 182 Mtoe) and final energy consumption (down by 12 % to 134 Mtoe). However, in recent years the decreasing trend seems to have stalled. As with other EU countries, this could be partially linked to the economic recovery, which implies additional energy efficiency efforts will be required if the energy consumption targets are to be met.

The UK is very active in the promotion of eco-innovation. However, the UK ranked 11th in the EU eco-innovation rankings scoreboard for 2015 (Eco-innovation observatory 2015). Multiple organisations foster systemic eco-innovation and a more circular economy. Particularly dynamic areas are remanufacturing and new business models, recycling, sustainable use of natural resources, ultra-low emission vehicles and carbon abatement technologies. In the UK, access to capital appears to be more of a barrier to circular economy projects than technical impediments.

Air pollution continues to be a challenge in the UK. Although an annual EU limit value for

nitrogen dioxide ($40\mu\text{g}/\text{m}^3$) has been in force since 2010, 37 out of the 43 air quality zones in the UK did not meet this air quality standard in 2016 (Defra, 2017). Air pollution is also a cause of many premature deaths in the UK (EEA, 2017). Road vehicles contribute about 80 % of NO₂ pollution at the roadside. Growth in the number of diesel cars has exacerbated this problem, as has the high level of road congestion discussed above. In the past, the relatively favourable treatment of diesel in the Vehicle Excise Duty system contributed to this. Following a series of legal challenges the government published a final revised air quality plan in July 2017. Based on these measures the government expects 37 of the UK's 43 zones to be compliant by 2021, with full compliance achieved only in 2026. A wider air quality strategy covering a broader range of pollutants and sources has been announced for 2018.

Research, development and innovation

Protracted low levels of R&D investment continue to hold back UK productivity growth (see Section 3.4). Over the past decade, R&D intensity has been broadly flat, remaining well below the EU average. In 2016, R&D investment accounted for 1.69 % of UK GDP, compared to an EU average of 2.03 %. As discussed in Section 3.4, there are significant regional differences in R&D intensity.

Private R&D has slightly increased in recent years, but remains below the EU average. Private R&D intensity has increased slightly since 2012, when it bottomed at 1.02 % of GDP, to reach 1.13 % in 2016, still below the 1.32 % EU average. To some extent, this is linked to the low weight of manufacturing in the UK economy (see Section 3.4), in particular high-tech manufacturing.

Public R&D has declined since 2009, which could jeopardise the UK's world class science base. UK public R&D — covering both government and Higher Education expenditure — fell from 0.63 % of GDP in 2009 to 0.52 % in 2016. This is significantly below the EU average of 0.69 % of GDP. This protracted low level of public R&D expenditure could negatively affect the quality of the UK's scientific production. However, to date, UK science continues to be world-class, supported by a culture of evaluation.

The UK produces 14.8 % of the top 10 % most cited publications worldwide, the highest proportion of any EU Member State.

The government has committed itself to significantly increasing public R&D investment.

In the 2017 Autumn Budget, the government pledged to increase public R&D spending by GBP 2.3 billion (EUR 2.6 billion) in 2018-2019, and up to GBP 12.5 billion (EUR 14.3 billion) by 2021-2022. This increased public investment is part of the government's productivity strategy (see Section 3.4) and is intended to help achieve a target of raising the UK's overall R&D investment to the level of the OECD average, currently 2.4 % of GDP. To date, UK-based stakeholders have received EUR 4.2 billion (GBP 3.7 billion) from the EU Horizon 2020 Research and Innovation Framework Programme.

Improving relatively weak science-business linkages would help the UK to capitalise on its scientific excellence. Existing initiatives, such as the Catapult Centres or the Higher Education Innovation Fund, should be evaluated with a view to refining and potentially expanding and/or complementing them. In addition, the creation of UK Research and Innovation — bringing together the Research Councils, Innovate UK, science and innovation functions of the Higher Education Funding Council for England, and the Industry Strategy Challenge Fund — can help improve the coherence of government policy.

Public administration

In spite of recent issues involving large contractors, the UK public procurement system generally functions well and is one of the most efficient in the EU. This is due in part to the high degree of professionalism of civil servants dealing with procurement procedures at central government level and the possibilities for training and professional development provided to them.

Legal and regulatory contracting authorities perform well on regulatory compliance.

Recently the Cabinet Office developed a comprehensive 'Commercial skills and competency framework' for civil servants. A central government entity, the Crown Commercial Service (CCS), has brought together policy, advice and direct buying as a central procurement body.

The CCS attempts to favour aggregation of demand where possible, increase the professionalisation of procurement officers and support administrations in achieving value for money through guidance and policy actions.

Small suppliers are encouraged to participate in public procurement procedures.

In the last few years, a strong emphasis has been placed on actions to make it easier for SMEs to access public procurement procedures. These actions include assessing suppliers after the award of the contract instead of doing so during the procedure; ensuring prompt payment to small enterprises and encouraging big suppliers to pay smaller subcontractors within a maximum of 60 days; dividing contracts into smaller lots; and creating an 'SME Panel' of industry representatives giving policy advice and recommendations on how to improve access for SMEs. Despite the effort towards greater aggregation, UK authorities have paid attention to making framework agreements more SME-friendly. While judicial review procedures remain costly, in particular for SMEs, the CCS has set up a 'Mystery Shopper' scheme to settle emerging issues during procurement procedures and analyse possible irregularities or inefficiencies.

The UK lags behind other EU countries in eGovernment.

This is particularly the case with regard to take up of eGovernment services, online service completion and the sophistication of services: availability of pre-filled forms is very low (17 out of 100). By contrast, the UK performs relatively well in the use of open data. In February 2017, the UK announced a new Government Transformation strategy for 2017-2020 (Cabinet Office, 2017). Its implementation will be crucial for improving eGovernment services and for encouraging higher usage.

ANNEX A

OVERVIEW TABLE

Commitments	Summary assessment ⁽²⁶⁾
2017 country-specific recommendations (CSRs)	
<p>CSR 1:</p> <p>Pursue a substantial fiscal effort in 2018-19 in line with the requirements of the preventive arm of the Stability and Growth Pact, taking into account the need to strengthen the ongoing recovery and to ensure the sustainability of the United Kingdom's public finances.</p>	<p>CSRs related to compliance with the Stability and Growth Pact will be assessed in spring once the final data is available.</p>
<p>CSR 2:</p> <p>Take further steps to boost housing supply, including through reforms to planning rules and their implementation.</p>	<p>The United Kingdom has made some progress in addressing CSR 2:</p> <p>Some progress on boosting housing supply. The government is implementing a wide-range of measures to boost housing supply and announced further measures in its 2017 Autumn Budget. These measures have likely contributed to higher annual housing completions in recent years. However, new housing supply remains below estimated housing need and many barriers to housebuilding remain.</p>
<p>CSR 3:</p> <p>Address skills mismatches and provide for skills progression, including by continuing to strengthen the quality of apprenticeships and providing for other</p>	<p>The United Kingdom has made some progress in addressing CSR 3:</p> <p>Some progress in addressing skills and apprenticeship issues. There has been some</p>

⁽²⁶⁾ The following categories are used to assess progress in implementing the 2017 country-specific recommendations (CSRs):

No progress: The Member State has not credibly announced nor adopted any measures to address the CSR. This category covers a number of typical situations, to be interpreted on a case-by-case basis taking into account country-specific conditions. They include the following:

- no legal, administrative, or budgetary measures have been announced in the national reform programme, in any other official communication to the national Parliament/relevant parliamentary committees or the European Commission, publicly (e.g. in a press statement or on the government's website);
- no non-legislative acts have been presented by the governing or legislative body;
- the Member State has taken initial steps in addressing the CSR, such as commissioning a study or setting up a study group to analyse possible measures to be taken (unless the CSR explicitly asks for orientations or exploratory actions). However, it has not proposed any clearly-specified measure(s) to address the CSR.

Limited progress: The Member State has:

- announced certain measures but these address the CSR only to a limited extent; and/or
- presented legislative acts in the governing or legislative body but these have not been adopted yet and substantial further, non-legislative work is needed before the CSR is implemented;
- presented non-legislative acts, but has not followed these up with the implementation needed to address the CSR.

Some progress: The Member State has adopted measures:

- that partly address the CSR; and/or
- that address the CSR, but a fair amount of work is still needed to address the CSR fully as only a few of the measures have been implemented. For instance, a measure or measures have been adopted by the national Parliament or by ministerial decision, but no implementing decisions are in place.

Substantial progress: The Member State has adopted measures that go a long way towards addressing the CSR and most of them have been implemented.

Full implementation: The Member State has implemented all measures needed to address the CSR appropriately

funded 'Further Education' progression routes.	progress in implementing this CSR. Quality in apprenticeships, if measured by the level at which an apprenticeship is taken, increased in 2016-2017. For example, there has been an increase of 37.4 % in 'higher' apprenticeships, albeit from a very low base, and they still only represent 7.5 % of starts. This coincided with the beginning of the Apprenticeship Levy. Other routes for those aged 16-19 will become available via new 'T-level' vocational qualifications, while other upskilling and reskilling routes for older participants, whether currently working or not, should become available when the 'National Retraining Scheme' is in operation. For now both developments are at a very early stage.
Europe 2020 (national targets and progress)	
Employment rate target: None	77.5 % of the population aged 20-64 was employed in 2016.
R&D target: None	<p>R&D intensity fell marginally to 1.69 % in 2016. Public R&D intensity was 0.52 % and business R&D intensity 1.12 %.</p> <p>The UK is below the EU average of 2.03 % for R&D intensity. EU average public R&D intensity was 0.69 % and business R&D intensity 1.32 %.</p>
<p>National greenhouse gas (GHG) emissions target:</p> <p>-16 % in 2020 compared to 2005 (in sectors not included in the EU emissions trading scheme)</p>	<p>2020 target: -16 %</p> <p>According to the latest national projections and taking into account existing measures, the target is expected to be achieved: -26 % in 2020 compared to 2005 (with a margin of 10 percentage points).</p> <p>Non-ETS 2016 target: -17 %</p> <p>According to preliminary estimates, the change in non-ETS greenhouse gas emissions between 2005 and 2016 was -22 %, therefore the target is expected to be achieved.</p>
<p>2020 renewable energy target: 15 %</p> <p>2020 Share of renewables in transport:</p>	<p>At an estimated level of 9.3 % in 2016, the UK is still some distance away from its 2020 target of 15 %, even though it is above its indicative national trajectory.</p> <p>With an estimated 4.9 % share of renewable</p>

	energy sources in transport in 2016, the UK is almost halfway towards the binding 10 % target in transport to be achieved by 2020. The UK's slow uptake of renewables in the transport sector has been driven by the restriction in the use of biofuels with high indirect land-use change implications.
2020 Energy Efficiency Target: 129.2 million tonnes of oil equivalent (Mtoe) for final energy consumption corresponding to 177.6 Mtoe for primary energy consumption.	The UK is now 2.3 % above its 2020 primary energy consumption target and 3.5 % above its 2020 final energy consumption target. The UK has to increase its effort to cut primary and final energy consumption by the required levels.
Early school leaving target: None	The indicator on early school leavers recorded a 2.2 pps reduction over a five-year period, from 13.4 % in 2012 to 11.2 % in 2016, which is below the EU average of 10.7 %.
Tertiary education target: None	The tertiary attainment rate of 30-34 year olds reached 48.2 % in 2016, a small increase on the 2015 rate of 47.9 %. This is significantly above the EU average of 39.1 %.
Target for reducing the number of people at risk of poverty or social exclusion: None	The 'at-risk-of-poverty-or-social-exclusion rate' stood at 22.2 % in 2016, a decrease from the 2015 figure of 23.5 %.

ANNEX B

MACROECONOMIC IMBALANCE PROCEDURE SCOREBOARD

Table B.1: The MIP scoreboard for United Kingdom (AMR 2018)

			Thresholds	2011	2012	2013	2014	2015	2016
External imbalances and competitiveness	Current account balance, % of GDP	3 year average	-4%/6%	-3.4	-3.5	-4.1	-5.0	-5.4	-5.5
	Net international investment position	% of GDP	-35%	-11.7	-29.0	-18.5	-22.3	-18.4	-1.1
	Real effective exchange rate - 42 trading partners, HICP deflator	3 year % change	±5% (EA) ±11% (Non-EA)	-8.0	5.9	3.4	10.1	10.8	0.2
	Export market share - % of world exports	5 year % change	-6%	-25.7	-20.9	-12.0	-8.9	2.2	-0.1
	Nominal unit labour cost index (2010=100)	3 year % change	9% (EA) 12% (Non-EA)	7.1	3.2	3.4	3.1	2.2	3.1
Internal imbalances	House price index (2015=100), deflated	1 year % change	6%	-5.0	-1.7	0.3	6.0	5.3	5.5
	Private sector credit flow, consolidated	% of GDP	14%	1.7	1.8	6.9	6.8	3.5	8.2
	Private sector debt, consolidated	% of GDP	133%	179.6	179.6	173.7	166.8	164.7	168.1
	General government gross debt	% of GDP	60%	81.3	84.5	85.6	87.4	88.2	88.3
	Unemployment rate	3 year average	10%	7.8	7.9	7.8	7.2	6.3	5.4
	Total financial sector liabilities, non-consolidated	1 year % change	16.5%	10.4	-3.6	-7.7	4.7	-8.8	11.6
Employment indicators	Activity rate - % of total population aged 15-64	3 year change in pp	-0.2 pp	-0.3b	0.4	1.0	1.2	0.8	0.9
	Long-term unemployment rate - % of active population aged 15-74	3 year change in pp	0.5 pp	1.3	0.8	0.2	-0.5	-1.1	-1.4
	Youth unemployment rate - % of active population aged 15-24	3 year change in pp	2 pp	6.3	2.1	0.8	-4.3	-6.6	-7.7

(1) This table provides data as published under the Alert Mechanism Report 2018, which reports data as of 24 Oct 2017. Please note that figures reported in this table may therefore differ from more recent data elsewhere in this document.

(2) Figures highlighted are those falling outside the threshold established in the European Commission's Alert Mechanism Report.

Source: European Commission 2017, Statistical Annex to the Alert Mechanism Report 2018, SWD(2017) 661.

ANNEX C

STANDARD TABLES

Table C.1: **Financial market indicators**

	2012	2013	2014	2015	2016	2017
Total assets of the banking sector (% of GDP) ⁽¹⁾	459.9	431.0	394.8	359.5	371.5	393.3
Share of assets of the five largest banks (% of total assets)	42.8	43.7	38.9	37.0	35.5	-
Foreign ownership of banking system (% of total assets) ⁽²⁾	28.9	27.9	37.1	37.2	38.8	39.6
Financial soundness indicators: ⁽²⁾						
- non-performing loans (% of total loans) ⁽³⁾	2.0	1.8	2.8	-	1.6	1.4
- capital adequacy ratio (%)	17.1	19.3	-	19.5	20.8	20.5
- return on equity (%) ⁽⁴⁾	1.9	2.2	3.8	3.2	2.1	2.7
Bank loans to the private sector (year-on-year % change) ⁽¹⁾	2.9	-4.7	1.9	7.6	-9.1	2.7
Lending for house purchase (year-on-year % change) ⁽¹⁾	4.4	-0.8	9.7	9.6	-10.8	1.7
Loan to deposit ratio ⁽¹⁾	102.6	99.3	96.1	96.8	94.4	94.1
Central Bank liquidity as % of liabilities	-	-	-	-	-	-
Private debt (% of GDP)	179.6	173.7	166.8	164.7	168.1	-
Gross external debt (% of GDP) ⁽²⁾ - public	26.3	25.7	26.3	27.9	29.9	29.1
- private	124.0	121.7	126.0	102.4	95.2	100.8
Long-term interest rate spread versus Bund (basis points)*	24.9	45.7	97.7	129.8	113.1	80.8
Credit default swap spreads for sovereign securities (5-year)*	51.2	34.9	21.8	18.4	32.7	20.6

(1) Latest data Q3 2017. Includes not only banks but all monetary financial institutions excluding central banks

(2) Latest data Q2 2017.

(3) As per ECB definition of gross non-performing debt instruments

(4) Quarterly values are not annualised

* Measured in basis points.

Sources: European Commission, World Bank, Eurostat, ECB

Table C.2: **Headline Social Scoreboard indicators**

	2012	2013	2014	2015	2016	2017 ⁵
Equal opportunities and access to the labour market						
Early leavers from education and training (% of population aged 18-24)	13.4	12.4	11.8	10.8	11.2	:
Gender employment gap (pps)	11.6	11.1	11.3	11.2	11.0	10.3
Income inequality, measured as quintile share ratio (S80/S20)	5.0	4.6	5.1	5.2	5.1	:
At-risk-of-poverty or social exclusion rate ¹ (AROPE)	24.1	24.8	24.1	23.5	22.2	:
Young people neither in employment nor in education and training (% of population aged 15-24)	13.9	13.2	11.9	11.1	10.9	:
Dynamic labour markets and fair working conditions[†]						
Employment rate (20-64 years)	74.1	74.8	76.2	76.8	77.5	78.1
Unemployment rate ² (15-74 years)	7.9	7.5	6.1	5.3	4.8	4.4
Gross disposable income of households in real terms per capita ³ (Index 2008=100)	:	:	99.9	102.4	102.9	:
Public support / Social protection and inclusion						
Impact of social transfers (excluding pensions) on poverty reduction ⁴	46.1	47.2	42.9	43.3	43.4	:
Children aged less than 3 years in formal childcare	27.0	30.0	28.9	30.4	28.4	:
Self-reported unmet need for medical care	1.4	1.6	2.1	2.8	1.0	:
Individuals who have basic or above basic overall digital skills (% of population aged 16-74)	:	:	:	67.0	69.0	71.0

† The Social Scoreboard includes 14 headline indicators, of which 12 are currently used to compare Member States performance. The indicators "participants in active labour market policies per 100 persons wanting to work" and "compensation of employees per hour worked (in EUR)" are not used due to technical concerns by Member States. Possible alternatives will be discussed in the relevant Committees.

(1) People at risk of poverty or social exclusion (AROPE): individuals who are at risk of poverty (AROP) and/or suffering from severe material deprivation (SMD) and/or living in households with zero or very low work intensity (LWI).

(2) Unemployed persons are all those who were not employed but had actively sought work and were ready to begin working immediately or within two weeks.

(3) Gross disposable household income is defined in unadjusted terms, according to the draft Joint Employment Report 2018.

(4) Reduction in percentage of the risk of poverty rate, due to social transfers (calculated comparing at-risk-of poverty rates before social transfers with those after transfers; pensions are not considered as social transfers in the calculation).

(5) Average of first three quarters of 2017, except for the indicator "individual who have basic or above basic digital skills" (annual data). Data for unemployment rate is seasonally adjusted

Source: Eurostat

Table C.3: Labour market, education and social indicators

Labour market indicators	2012	2013	2014	2015	2016	2017 ⁵
Activity rate (15-64)	76.1	76.4	76.7	76.9	77.3	:
Employment in current job by duration						
<i>From 0 to 11 months</i>	13.2	13.5	14.6	15.3	15.0	:
<i>From 12 to 23 months</i>	9.7	9.9	10.3	11.0	11.6	:
<i>From 24 to 59 months</i>	19.0	18.0	18.1	18.2	19.5	:
<i>60 months or over</i>	57.0	57.5	56.1	54.7	53.1	:
Employment growth*						
(% change from previous year)	1.1	1.2	2.4	1.7	1.4	1.1
Employment rate of women						
(% of female population aged 20-64)	68.4	69.3	70.6	71.3	72.1	73.0
Employment rate of men						
(% of male population aged 20-64)	80.0	80.4	81.9	82.5	83.1	83.3
Employment rate of older workers*						
(% of population aged 55-64)	58.1	59.8	61.0	62.2	63.4	63.9
Part-time employment*						
(% of total employment, aged 15-64)	25.9	25.6	25.3	25.2	25.2	24.9
Fixed-term employment*						
(% of employees with a fixed term contract, aged 15-64)	6.2	6.1	6.3	6.1	6.0	5.7
Transition rate from temporary to permanent employment (3-year average)	58.5	55.4	57.7	58.6	:	:
Long-term unemployment rate ¹ (% of labour force)	2.7	2.7	2.2	1.6	1.3	1.2
Youth unemployment rate						
(% active population aged 15-24)	21.2	20.7	17.0	14.6	13.0	12.1
Gender gap in part-time employment	30.6	29.9	30.0	29.7	29.5	29.1
Gender pay gap ² (in undadjusted form)	21.2	20.5	20.9	20.8	:	:
Education and training indicators	2012	2013	2014	2015	2016	2017
Adult participation in learning (% of people aged 25-64 participating in education and training)	16.3	16.6	16.3	15.7	14.4	:
Underachievement in education ³	21.8	:	:	21.9	:	:
Tertiary educational attainment (% of population aged 30-34 having successfully completed tertiary education)	46.9	47.4	47.7	47.9	48.2	:
Variation in performance explained by students' socio-economic status ⁴	12.5	:	:	10.5	:	:

* Non-scoreboard indicator

(1) Long-term unemployed are people who have been unemployed for at least 12 months.

(2) Difference between the average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. It is defined as "unadjusted", as it does not correct for the distribution of individual characteristics (and thus gives an overall picture of gender inequalities in terms of pay). All employees working in firms with ten or more employees, without restrictions for age and hours worked, are included.

(3) PISA (OECD) results for low achievement in mathematics for 15 year-olds.

(4) Impact of socio-economic and cultural status on PISA (OECD) scores. Values for 2012 and 2015 refer respectively to mathematics and science..

(5) Average of first three quarters of 2017. Data for youth unemployment rate is seasonally adjusted.

Source: Eurostat, OECD

Table C.4: Social inclusion and health indicators

	2012	2013	2014	2015	2016	2017
Expenditure on social protection benefits* (% of GDP)						
<i>Sickness/healthcare</i>	8.7	8.6	8.4	9.9	:	:
<i>Disability</i>	1.8	1.6	1.6	1.7	:	:
<i>Old age and survivors</i>	12.2	12.0	11.7	11.7	:	:
<i>Family/children</i>	3.1	2.9	2.8	2.7	:	:
<i>Unemployment</i>	0.7	0.6	0.4	0.4	:	:
<i>Housing</i>	1.5	1.4	1.4	1.3	:	:
<i>Social exclusion n.e.c.</i>	0.8	0.7	0.7	0.6	:	:
Total	28.7	27.9	27.1	28.4	:	:
<i>of which: means-tested benefits</i>	4.1	3.8	3.5	3.4	:	:
General government expenditure by function (% of GDP, COFOG)						
<i>Social protection</i>	17.3	16.9	16.5	16.4	:	:
<i>Health</i>	7.4	7.5	7.6	7.6	:	:
<i>Education</i>	5.7	5.4	5.4	5.1	:	:
Out-of-pocket expenditure on healthcare (% of total health expenditure)	:	14.8	14.7	14.8	:	:
Children at risk of poverty or social exclusion (% of people aged 0-17)*	31.2	32.6	31.2	30.3	27.2	:
At-risk-of-poverty rate ¹ (% of total population)	16.0	15.9	16.8	16.6	15.9	:
In-work at-risk-of-poverty rate (% of persons employed)	9.0	8.4	8.7	8.1	8.6	:
Severe material deprivation rate ² (% of total population)	7.8	8.3	7.4	6.1	5.2	:
Severe housing deprivation rate ³ , by tenure status						
<i>Owner, with mortgage or loan</i>	0.8	1.2	1.1	0.5	0.6	:
<i>Tenant, rent at market price</i>	4.2	5.0	4.5	4.8	5.2	:
Proportion of people living in low work intensity households ⁴ (% of people aged 0-59)	13.0	13.2	12.3	11.9	11.3	:
Poverty thresholds, expressed in national currency at constant prices*	7977	7920	8054	8127	8304	:
Healthy life years (at the age of 65)						
<i>Females</i>	10.5	10.7	10.6	10.4	:	:
<i>Males</i>	10.5	10.6	9.7	10.2	:	:
Aggregate replacement ratio for pensions ⁵ (at the age of 65)	0.5	0.5	0.5	0.5	0.5	:
Connectivity dimension of the Digital Economy and Society Index (DESI) ⁶	:	:	65.7	69.3	72.1	74.2
GINI coefficient before taxes and transfers*	55.0	54.3	53.6	55.3	53.6	:
GINI coefficient after taxes and transfers*	31.3	30.2	31.6	32.4	31.5	:

* Non-scoreboard indicator

(1) At-risk-of-poverty rate (AROP): proportion of people with an equivalised disposable income below 60% of the national equivalised median income.

(2) Proportion of people who experience at least four of the following forms of deprivation: not being able to afford to i) pay their rent or utility bills, ii) keep their home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) enjoy a week of holiday away from home once a year, vi) have a car, vii) have a washing machine, viii) have a colour TV, or ix) have a telephone.

(3) Percentage of total population living in overcrowded dwellings and exhibiting housing deprivation.

(4) People living in households with very low work intensity: proportion of people aged 0-59 living in households where the adults (excluding dependent children) worked less than 20% of their total work-time potential in the previous 12 months.

(5) Ratio of the median individual gross pensions of people aged 65-74 relative to the median individual gross earnings of people aged 50-59.

(6) Fixed broadband take up (33%), mobile broadband take up (22%), speed (33%) and affordability (11%), from the Digital Scoreboard. **Source:** Eurostat, OECD

Table C.5: Product market performance and policy indicators

Performance Indicators	2010	2011	2012	2013	2014	2015	2016
Labour productivity (real, per person employed, year-on-year % change)							
Labour productivity in Industry	3.40	-1.75	-3.95	-1.88	1.98	1.23	0.66
Labour productivity in Construction	13.84	2.62	-7.01	-0.61	3.23	4.06	-2.00
Labour productivity in Market Services	2.19	0.37	-0.28	0.42	0.79	1.38	0.24
Unit labour costs (ULC) (whole economy, year-on-year % change)							
ULC in Industry	-0.55	3.39	4.50	5.46	-1.62	1.38	3.41
ULC in Construction	-7.48	0.95	9.47	1.74	-6.45	-3.26	0.90
ULC in Market Services	0.56	-0.82	-0.10	2.97	-0.49	0.52	0.97
Business Environment	2010	2011	2012	2013	2014	2015	2016
Time needed to enforce contracts ⁽¹⁾ (days)	399.0	399.0	437.0	437.0	437.0	437.0	437.0
Time needed to start a business ⁽¹⁾ (days)	11.5	11.5	11.5	11.5	6.0	4.5	4.5
Outcome of applications by SMEs for bank loans ⁽²⁾	na	1.12	na	0.76	0.57	0.35	0.33
Research and innovation	2010	2011	2012	2013	2014	2015	2016
R&D intensity	1.67	1.67	1.60	1.65	1.67	1.67	1.69
General government expenditure on education as % of GDP	6.50	6.00	5.70	5.40	5.40	5.10	na
Persons with tertiary education and/or employed in science and technology as % of total employment	45	51	51	52	53	53	54
Population having completed tertiary education ⁽³⁾	32	33	35	36	37	38	38
Young people with upper secondary level education ⁽⁴⁾	81	80	82	83	84	86	85
Trade balance of high technology products as % of GDP	-1.22	-0.65	-0.88	-0.96	-1.14	-1.12	na
Product and service markets and competition					2003	2008	2013
OECD product market regulation (PMR) ⁽⁵⁾ , overall					1.10	1.21	1.08
OECD PMR5, retail					2.15	2.18	1.79
OECD PMR5, professional services					0.96	0.82	0.82
OECD PMR5, network industries ⁽⁶⁾					1.30	0.98	0.79

(1) The methodologies, including the assumptions, for this indicator are shown in detail here:

<http://www.doingbusiness.org/methodology>.

(2) Average of the answer to question Q7B_a. "[Bank loan]: If you applied and tried to negotiate for this type of financing over the past six months, what was the outcome?". Answers were codified as follows: zero if received everything, one if received most of it, two if only received a limited part of it, three if refused or rejected and treated as missing values if the application is still pending or don't know.

(3) Percentage population aged 15-64 having completed tertiary education.

(4) Percentage population aged 20-24 having attained at least upper secondary education.

(5) Index: 0 = not regulated; 6 = most regulated. The methodologies of the OECD product market regulation indicators are shown in detail here: <http://www.oecd.org/competition/reform/indicatorsofproductmarketregulationhomepage.htm>

(6) Aggregate OECD indicators of regulation in energy, transport and communications (ETCR).

Source: European Commission, World Bank, OECD, SAFE

Table C.6: **Green growth**

Green growth performance		2011	2012	2013	2014	2015	2016
Macroeconomic							
Energy intensity	kgoe / €	0.11	0.11	0.10	0.10	0.09	0.09
Carbon intensity	kg / €	0.30	0.31	0.29	0.26	0.25	-
Resource intensity (reciprocal of resource productivity)	kg / €	0.31	0.30	0.29	0.30	0.28	0.27
Waste intensity	kg / €	-	0.12	-	0.13	-	-
Energy balance of trade	% GDP	-1.0	-1.2	-1.1	-0.8	-0.6	-0.5
Weighting of energy in HICP	%	8.70	10.20	8.80	8.00	7.60	6.70
Difference between energy price change and inflation	%	5.4	5.2	4.6	2.9	-3.3	-3.7
Real unit of energy cost	% of value added	9.9	10.0	10.0	10.0	-	-
Ratio of environmental taxes to labour taxes	ratio	0.18	0.19	0.19	0.20	0.20	-
Environmental taxes	% GDP	2.5	2.5	2.5	2.4	2.5	2.4
Sectoral							
Industry energy intensity	kgoe / €	0.11	0.11	0.11	0.11	0.11	-
Real unit energy cost for manufacturing industry excl. refining	% of value added	10.9	11.1	11.1	10.9	-	-
Share of energy-intensive industries in the economy	% GDP	7.19	6.77	6.56	6.36	6.36	-
Electricity prices for medium-sized industrial users	€ / kWh	0.10	0.12	0.12	0.13	0.15	0.13
Gas prices for medium-sized industrial users	€ / kWh	0.03	0.03	0.04	0.04	0.04	0.03
Public R&D for energy	% GDP	0.01	0.01	0.01	0.01	0.01	0.01
Public R&D for environmental protection	% GDP	0.02	0.02	0.02	0.01	0.01	0.01
Municipal waste recycling rate	%	42.0	42.6	43.3	43.7	43.5	-
Share of GHG emissions covered by ETS*	%	39.2	39.8	39.4	37.9	34.8	31.1
Transport energy intensity	kgoe / €	0.71	0.71	0.69	0.67	0.66	-
Transport carbon intensity	kg / €	1.60	1.60	1.57	1.50	1.52	-
Security of energy supply							
Energy import dependency	%	36.6	42.9	47.1	46.1	37.3	35.3
Aggregated supplier concentration index	HHI	4.9	5.2	5.8	6.4	4.0	-
Diversification of energy mix	HHI	0.28	0.27	0.26	0.27	0.27	0.30

All macro intensity indicators are expressed as a ratio of a physical quantity to GDP (in 2010 prices)

Energy intensity: gross inland energy consumption (in kgoe) divided by GDP (in EUR)

Carbon intensity: greenhouse gas emissions (in kg CO₂ equivalents) divided by GDP (in EUR)

Resource intensity: domestic material consumption (in kg) divided by GDP (in EUR)

Waste intensity: waste (in kg) divided by GDP (in EUR)

Energy balance of trade: the balance of energy exports and imports, expressed as % of GDP

Weighting of energy in HICP: the proportion of 'energy' items in the consumption basket used for the construction of the HICP

Difference between energy price change and inflation: energy component of HICP, and total HICP inflation (annual % change)

Real unit energy cost: real energy costs as % of total value added for the economy

Industry energy intensity: final energy consumption of industry (in kgoe) divided by gross value added of industry (in 2010 EUR)

Real unit energy costs for manufacturing industry excluding refining: real costs as % of value added for manufacturing sectors

Share of energy-intensive industries in the economy: share of gross value added of the energy-intensive industries in GDP

Electricity and gas prices for medium-sized industrial users: consumption band 500–20 000 MWh and 10 000–100 000 GJ; figures excl. VAT.

Recycling rate of municipal waste: ratio of recycled and composted municipal waste to total municipal waste

Public R&D for energy or for the environment: government spending on R&D for these categories as % of GDP

Proportion of GHG emissions covered by EU emissions trading system (ETS) (excluding aviation): based on GHG emissions (excl. land use, land use change and forestry) as reported by Member States to the European Environment Agency.

Transport energy intensity: final energy consumption of transport activity (kgoe) divided by transport industry gross value added (in 2010 EUR)

Transport carbon intensity: GHG emissions in transport activity divided by gross value added of the transport sector

Energy import dependency: net energy imports divided by gross inland energy consumption incl. consumption of international bunker fuels

Aggregated supplier concentration index: covers oil, gas and coal. Smaller values indicate larger diversification and hence lower risk.

Diversification of the energy mix: Herfindahl index covering natural gas, total petrol products, nuclear heat, renewable energies and solid fuels

* European Commission and European Environment Agency

Source: European Commission, European Environment Agency

REFERENCES

Adalet McGowan, M., D. Andrews and V. Millot (2017), *The Walking Dead? Zombie Firms and Productivity Performance in OECD Countries*, OECD Economics Department Working Paper, No 1372, using the Orbis firm level data by Bureau van Dijk.

Bank of England (2017), *Inflation Report November 2017*.

BEIS — Department for Business, Energy & Industrial Strategy (2017a), *Industrial Strategy: Building a Britain fit for the future*, Crown.

BEIS — Department for Business, Energy and Industrial Strategy (2017b), *Digest of UK energy statistics*.

BEIS — Department for Business, Energy and Industrial Strategy (2017c), *Contracts for Difference Second Allocation Round Results*.

Cabinet Office (2017), *Government Transformation Strategy*.

CASE — Center for Social and Economic Research (2017), *Study and Reports on the VAT Gap in the EU-28 Member States: 2017 Final Report*.

CBI — Confederation of British Industry (2017), *From ostrich to magpie: increasing business take-up of proven ideas and technologies*.

CBI/AECOM (2017), *CBI/AECOM Infrastructure Survey 2017*.

CPB Netherlands Bureau for Economic Policy Analysis (2014), *Ranking the Stars Network Analysis of Bilateral Tax Treaties*, CPB Discussion paper 290.

DCLG — Department for Communities and Local Government (2016), *Single departmental plans for 2015 to 2020*, Crown.

DCLG — Department for Communities and Local Government (2017), *Fixing our broken housing market*, Crown.

DCMS — Department for Digital, Culture, Media & Sport (2017), *UK Digital Strategy*, Crown.

Defra — Department for Environment, Food and Rural Affairs (2017), *Air Quality Plan for nitrogen dioxide (NO₂) in UK (2017): Zone Plans*.

DfE — Department for Education (2013), *Teacher supply model: a technical description*.

DfE — Department for Education (2017), *The national funding formula for schools and high needs*.

DfT — Department for Transport (2014a), *National Policy Statement for National Networks*, Crown.

DfT — Department for Transport (2015), *Road investment strategy: economic analysis*, Crown.

DfT — Department for Transport (2016), *DfT Table RDL0103 (2016), Road lengths (miles) by road type in Great Britain*.

DfT — Department for Transport (2017a), *Transport Investment Strategy: Moving Britain Ahead*, Crown.

DfT — Department for Transport (2017b), *Rail passenger numbers and crowding on weekdays (RAI0213)*.

- DfT — Department for Transport (2017c), *Rail factsheet: 2017*, Crown.
- DfT — Department for Transport (2017d), *Southern Rail network: Gibb report*, Crown.
- DfT — Department for Transport (2017e), *Connecting people: a strategic vision for rail*, Crown.
- EEA — European Environment Agency (2017), *Air quality in Europe — 2017 report*.
- EMTA — European Metropolitan Transport Authorities (2017), *EMTA 2015 Barometer*.
- European Commission (2017a), *Employment and Social Developments in Europe, Annual Review 2017*, Publications Office of the European Union, 2017.
- European Commission (2017b) *State aid: Commission opens in-depth investigation into UK tax scheme for multinationals*, Press Release
- European Commission (2017c), *Investment in the EU Member States: An analysis of drivers and barriers, Institutional Paper 062, November 2017*.
- European Commission (2017d), *Digital Economy and Society Index 2017*.
- European Commission (2017e), Updated data of European Commission (2014), *Infrastructure in the EU: Developments and impacts on Growth, European Economy, Occasional Papers, No 203*.
- Feantsa (2017), *Second Overview of Housing Exclusion in Europe*.
- Haldane (2017), *Productivity puzzles*, Speech to the London School of Economics by the Bank of England's Chief Economist, March 2017.
- HM Government (2017), *The Clean Growth Strategy: Leading the way to a low carbon future*, Crown.
- HM Revenue & Customs (2015), *Corporation Tax: Patent Box — compliance with new international rules*, Crown.
- HM Revenue & Customs (2018), *Estimated Costs of Tax Reliefs*, Crown.
- HM Treasury (2016a), *Business tax road map*, Crown.
- HM Treasury (2016b), *Northern Powerhouse strategy*, Crown.
- HM Treasury (2017a), *Autumn Budget*, Crown.
- HM Treasury (2017b), *Country and regional analysis, November 2017*, Crown
- House of Commons (2017a), *Apprenticeships*, Second Joint Report of the Business, Energy and Industrial Strategy and Education Committees of Session 2016-17.
- House of Commons (2017b), *Fiscal Sustainability of Schools*, Public Accounts Committee.
- House of Lords (2016), *Select Committee on Economic Affairs (2016) Building more homes*.
- IFR — International Federation of Robotics (2016), *World robotics report 2016*.

- IFS — Institute for Fiscal Studies (2014), *The IFS Green Budget: February 2014*.
- Institute for Government (2017a), *How to value infrastructure: Improving cost benefit analysis*.
- Institute for Government (2017b), *What's wrong with infrastructure decision making? Conclusions from six UK case studies*.
- IPA — Infrastructure and Projects Authority (2017a), *Analysis of the National Infrastructure and Construction Pipeline*.
- IPA — Infrastructure and Projects Authority (2017b), *Transforming Infrastructure performance*.
- INRIX (2018), *INRIX 2017 Global Traffic Scorecard*.
- Kierzenkowski, R., G. Machlica and G. Fulop (2017a), *The UK productivity puzzle through the magnifying glass: A sectoral perspective*, Technical Background Paper.
- Kierzenkowski, R., P. Gal and G. Fulop (2017b), *Where to get the best bang for the buck in the United Kingdom? Industrial strategy, investment and lagging regions*, Technical Background Paper.
- NAO — National Audit Office (2017a), *Homelessness*.
- NAO — National Audit Office (2017b), *Housing in England*.
- NAO — National Audit Office (2017c), *Retaining and developing the teaching workforce*.
- NAO — National Audit Office (2017d), *PFI and PF2*.
- NAO — National Audit Office (2017e), *Progress in setting up combined authorities*.
- NAO — National Audit Office (2017f), *Hinkley Point C*.
- NAO — National Audit Office (2018), *Sustainability and transformation in the NHS*.
- NFER — National Foundation for Educational Research (2016), *Engaging Teachers: NFER analysis of teacher retention*.
- NHS — National Health Service (2018), *NHS England – Board Paper*.
- NIC — National Infrastructure Commission (2017a), *Congestion, capacity, carbon: priorities for national infrastructure. Consultation on a National Infrastructure Assessment*.
- NIC — National Infrastructure Commission (2017b), *Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc*.
- OBR — Office for Budget Responsibility (2017a), *Economic and Fiscal Outlook — November 2017*, Crown.
- OBR — Office for Budget Responsibility (2017b), *Fiscal risk report – July 2017*, Crown.
- OBR — Office for Budget Responsibility (2017c), *Economic and Fiscal Outlook – November 2017*, Crown.

- OECD (2013), *Action Plan on Base Erosion and Profit Shifting*.
- OECD (2016), *Programme for International Student Assessment (PISA): Results from PISA 2015*.
- OECD (2016), *Can an increase in public investment sustainably lift economic growth?* OECD Economics Department Working Papers No.1351.
- OECD (2017), *Economic Surveys United Kingdom*.
- OECD/European Observatory on Health Systems and Policies (2017), *United Kingdom: Country Health Profile 2017, State of Health in the EU*, OECD Publishing, Paris/European Observatory on Health Systems and Policies, Brussels.
- Ofcom (2017a), *UK Home Broadband Performance*, Research report, 12 April 2017.
- Ofcom (2017b), *Connected Nations Report 2017*.
- OFFA — Office for Fair Access (2017), *OFFA access agreement guidance – universities must play their part to raise school attainment*, Press release.
- Ofgem (2017a), *Statutory consultation for a vulnerable customer safeguard tariff*.
- Ofgem (2017b), *Open letter: creating incentives for suppliers to improve switching performance*.
- ONS — Office for National Statistics (2017a), *An international comparison of gross fixed capital formation: November 2017*.
- ONS — Office for National Statistics (2017b), *Labour productivity: July to September 2017*.
- ONS — Office for National Statistics (2017c), *International comparisons of UK productivity (ICP), first estimates: 2016*.
- ONS — Office for National Statistics (2017d), *Multi-factor productivity estimates: experimental estimates to 2015*.
- ONS — Office for National Statistics (2017e), *Economic Review: Apr 2017*.
- ONS — Office for National Statistics (2017f), *Foreign direct investment and labour productivity, a micro data perspective: 2012 to 2015*.
- ORR — Office for Road and Rail (2017) in Financial Times (2017), *Britons grapple with late trains, holed roads and flight delays*.
- RAC Foundation (2017), *Local government spending on roads*.
- Redfern (2016), *The Redfern Review into the decline of home ownership*, November 2016.
- Resolution Foundation (2017a), *The Generation of Wealth: Asset Accumulation across and within cohorts*.
- Resolution Foundation (2017b), *Home Affront: housing across the generations*, 20 September 2017.
- Resolution Foundation (2017c), *Helping or hindering? The latest on Help to Buy*, 3 November 2017.

Resolution Foundation (2017d), *Living Standards 2017: The past, present and possible future of UK incomes*.

RICS — Royal Institution of Chartered Surveyors (2018), *RICS UK Residential Market Survey December 2017*.

Social Mobility Commission (2017), *The Great Escape? Low pay and progression in the UK's labour market*.

Sutton Trust (2017), *Global Gaps: Comparing socio-economic gaps in the performance of highly able UK pupils internationally*.

Trade Union Congress (2017), *Average worker now spends 27 working days a year commuting*, 17 November 2017.

Transport Focus (2017), *Rail passengers' priorities for improvement*.

Transport for the North (2018), *Strategic Transport Plan: Draft for public consultation*.

Ward, H. (2016), *Study reveals huge variations in teacher training costs*. Times Educational Supplement.

ZEW (2016), *Project for the EU Commission TAXUD/2013/CC/120, Final Report 2016, Effective tax levels using the Devereux/Griffith methodology*.