

GLOBAL ECONOMIC OUTLOOK - NOVEMBER

Monetary Department
External Economic Relations Division

2018

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Cut-off date for data

16 November 2018

CF survey date

12 November 2018

GEO publication date

23 November 2018

Notes to charts

ECB and Fed: midpoint of the range of forecasts.

The arrows in the GDP and inflation outlooks indicate the direction of revisions compared to the last GEO. If no arrow is shown, no new forecast is available. Asterisks indicate first published forecasts for given year. Historical data are taken from CF, with exception of MT and LU, for which they come from EIU.

Leading indicators are taken from Bloomberg and Datastream.

Forecasts for EURIBOR and LIBOR rates are based on implied rates from interbank market yield curve (FRA rates are used from 4M to 15M and adjusted IRS rates for longer horizons). Forecasts for German and US government bond yields (10Y Bund and 10Y Treasury) are taken from CF.

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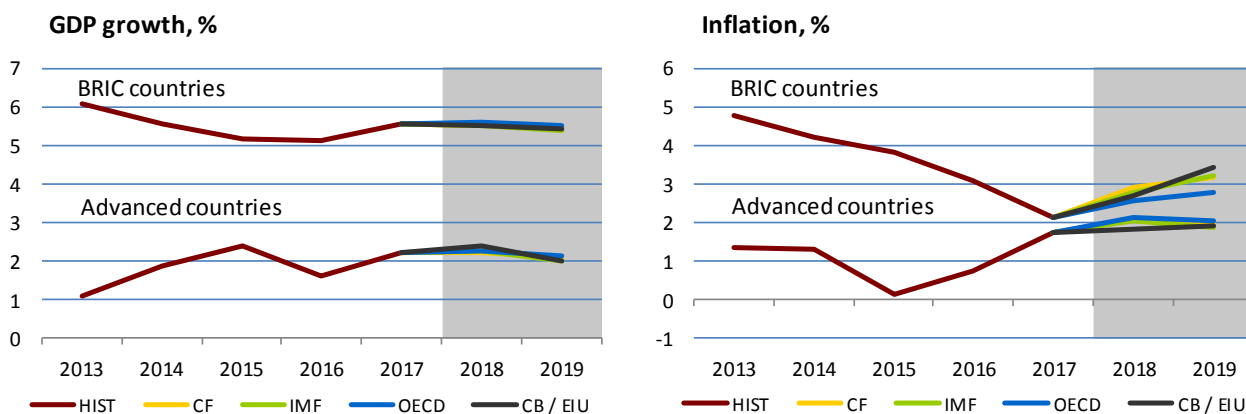
This year's penultimate issue of Global Economic Outlook presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. The analytical section of this issue tries to answer the question of why UK labour productivity has barely risen at all over the past decade. Despite still being the fifth-strongest economy in the world (measured by size of nominal GDP), the UK is thus beginning to lag visibly behind its closest rivals. The article summarises the debate on the possible causes of this unpleasant trend (under-investment and Brexit) and gives some potential solutions.

The November outlooks for economic growth in the economies we monitor predict a continued slowdown in the economic performance of both the euro area and its strongest part Germany. The outlooks for the US economy still indicate a slight growth correction next year after this year's significant acceleration, although to a lesser degree than in the October issue. GDP growth is thus expected to be 1 percentage point higher in the USA than in the euro area in the period up to the end of 2019. The difference in the pace of economic growth compared to the UK will be slightly bigger still. This is attributed mainly to Brexit-related uncertainty. The growth of the Japanese economy will probably only slightly exceed 1%, and the same rate of growth is expected for Japanese consumer prices. Inflation outlooks are above the 2% level for the USA and the UK and remain slightly below it for the euro area and Germany.

The November outlooks for the economic performance of the BRIC countries can still be assessed as solid and, with the exception of Brazil, remain unchanged. The Indian economy can thus be expected to grow by 7.5% and the Chinese economy by around 6.5%. In the case of China, any revision of these optimistic outlooks will depend on the degree of escalation or stabilisation of its trade disputes with the USA. The inflation estimates for China remain relatively low, only just above the 2% level. The inflation outlooks for India fell slightly and are now below 5%. This can be considered consistent with the robust economic growth in that country from the macroeconomic perspective. The growth predictions for Brazil and Russia did not improve from the previous month. The Russian economy is thus still trading water and its growth will stay below 2% until the end of 2019, while inflation will gradually rise to 4.5%. The outlooks for economic activity for Brazil were revised down to 2.5% amid expected inflation slightly exceeding 4%.

Euro area interest rates will remain negative for most of 2019 even after the planned end of quantitative easing. In the USA, by contrast, a continued gradual increase in rates can be expected, probably starting as early as the Fed's December meeting. According to CF, the US dollar will weaken slightly against the euro, the pound, the yen and the rouble, be broadly stable against the rupee and the renminbi and strengthen slightly against the real at the one-year horizon. The Brent crude oil price will be close to USD 74 a barrel at the one-year horizon. The metals price index continued to fall in November after a temporary correction in October. By contrast, the food commodity price index has been growing for two months now and its outlook is also visibly rising.

GDP growth and inflation development and outlook in monitored countries

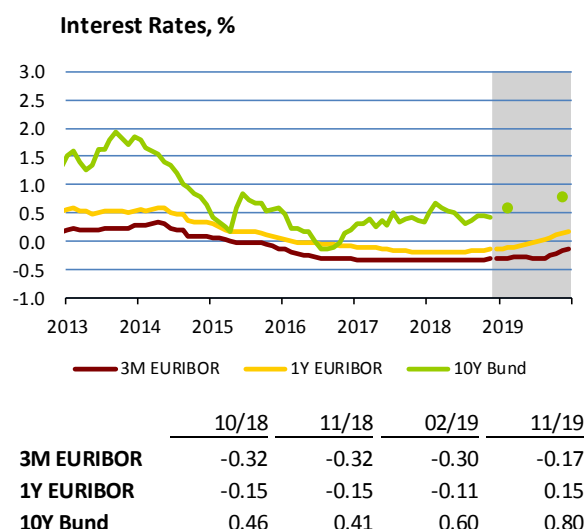
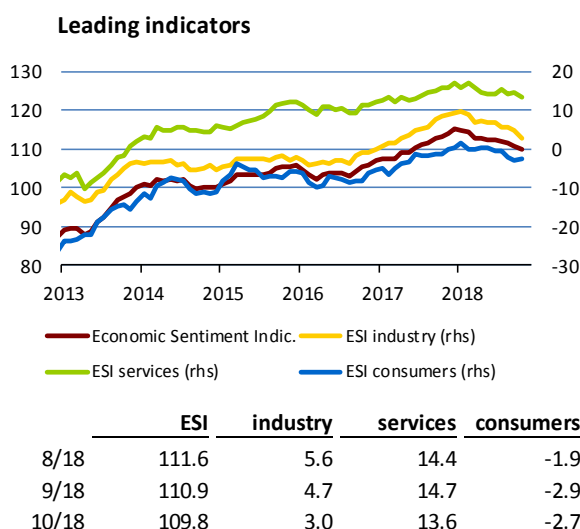
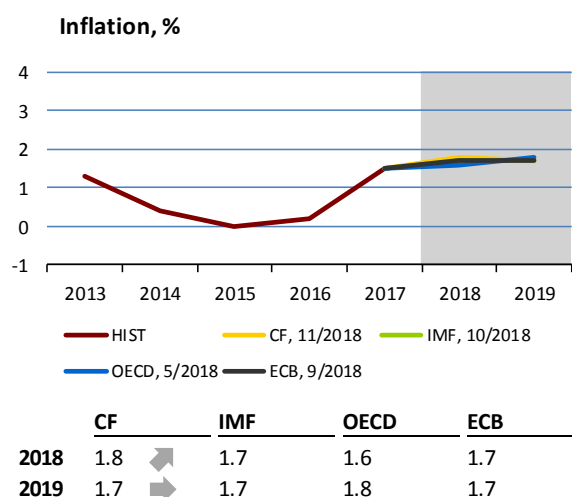
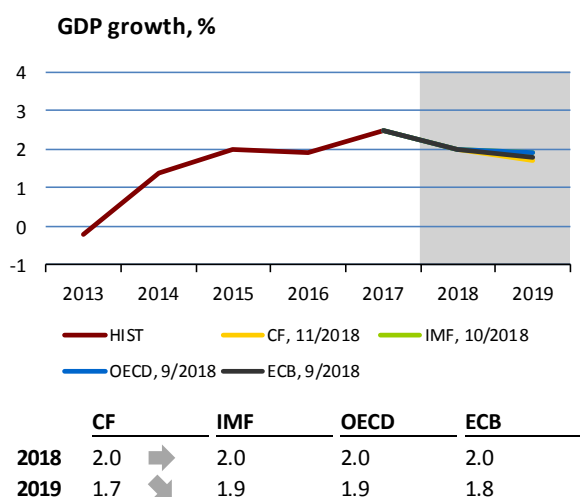


Note: The figures represent the weighted averages of historical series / outlooks in individual countries. The weights are based on nominal GDP measured in USD during 2013–2016 (source: EIU). Advanced countries: euro area, United States, United Kingdom, Japan. BRIC countries: China, India, Russia, Brazil.

II.1 Euro area

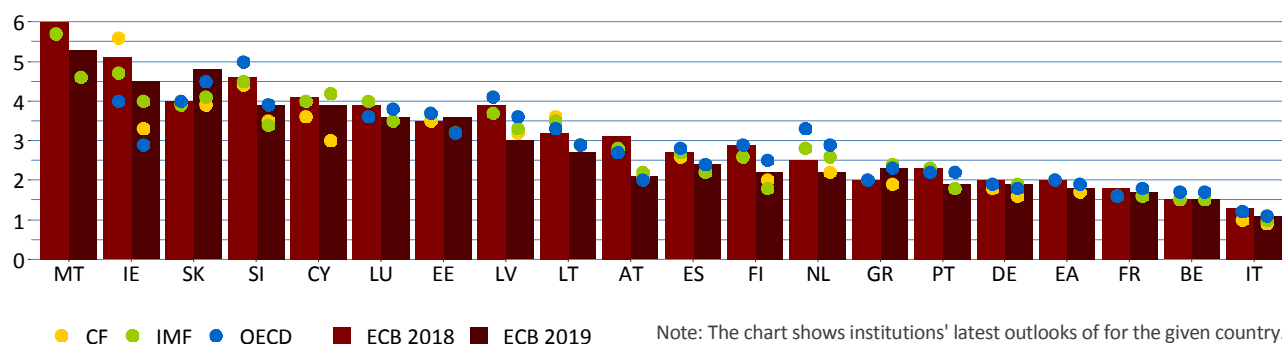
The euro area economy slowed in Q3. According to Eurostat’s flash estimate, GDP growth fell from 0.4% to 0.2% quarter on quarter and from 2.2% to 1.7% year on year. The slowdown is due partly to temporary factors (see the next section on Germany), but also to a shift in the business cycle, as growth has probably now peaked. Moreover, higher energy prices are reducing growth in households’ disposable income, which, however, is being supported by favourable labour market developments (unemployment dropped to 8.1%). Industrial production fell and retail sales were flat in September. Most of the leading indicators under review decreased again. The monitored outlooks expect the economy to grow by 2% this year as a whole. However, achievement of this figure is uncertain in the light of the latest data. Next year, the economy is expected to slow by a further 0.2 pp or so. The balance of risks shifted downwards again. Developments in Italy’s budget situation could lead to a greater tightening of financial conditions and a decline in growth not only in Italy, but also in other countries. The configuration and macroeconomic impacts of US trade policy are also uncertain. This uncertainty is already causing export orders to drop and sentiment in the euro area to worsen. On the other hand, economic growth could be supported by the recent drop in the oil price.

Headline inflation increased to 2.2% in October as a result of higher contributions of energy and services. Core inflation rose only to 1.1%. Inflation is expected to be just below 2% at the outlook horizon. Despite the economic slowdown, ECB confirmed its monetary policy stance at its October meeting. It assessed external developments as posing no risk to robust domestic economic growth. Moreover, its monetary policy will remain very accommodative even after the expected discontinuation of the asset purchase programme at the year-end (rates will stay at their current levels at least through summer 2019 and the principal payments from maturing securities will be reinvested for an extended period of time).

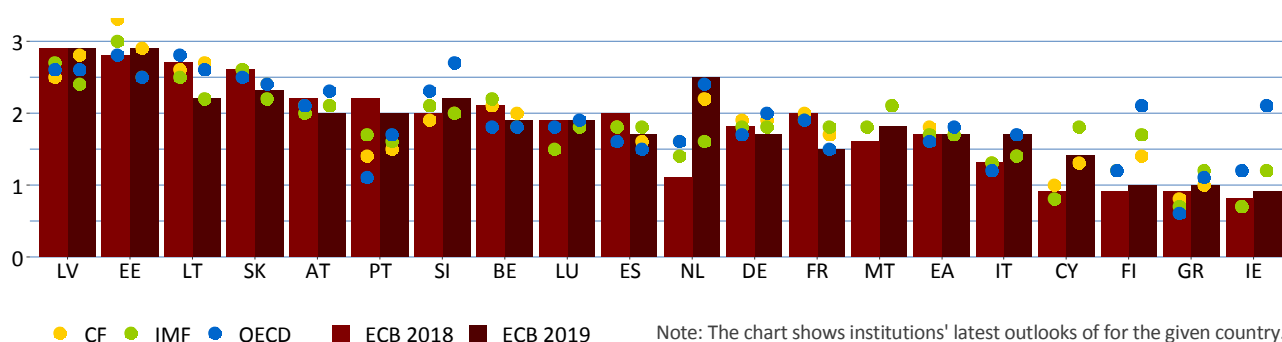


II. ECONOMIC OUTLOOK IN ADVANCED ECONOMIES

GDP growth outlooks in the euro area countries in 2018 and 2019, %

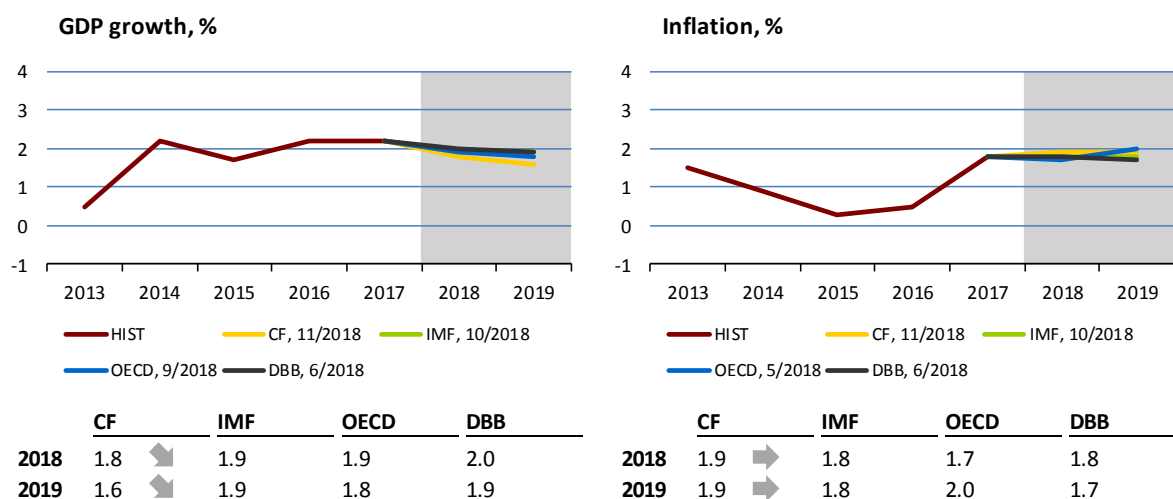


Inflation outlooks in the euro area countries in 2018 and 2019, %



II.2 Germany

The CF outlook for German economic growth shifted down slightly, while the inflation outlook was unchanged. GDP recorded a quarter-on-quarter decline in Q3, mainly because of temporary problems in the car industry. Car sales fell sharply in September as new emission limits took effect. Total industrial production thus rose only negligibly month on month in September. The leading IFO and ZEW indicators dropped further, although the ZEW sentiment indicator improved slightly in October. The leading PMI indicator in manufacturing also continued to fall slightly in October, but stayed in the expansion band. The sentiment indicators reflect the uncertainty surrounding external demand. Inflation was driven mainly by energy prices in October, as a result of which it rose to 2.5%, while core inflation was substantially lower.



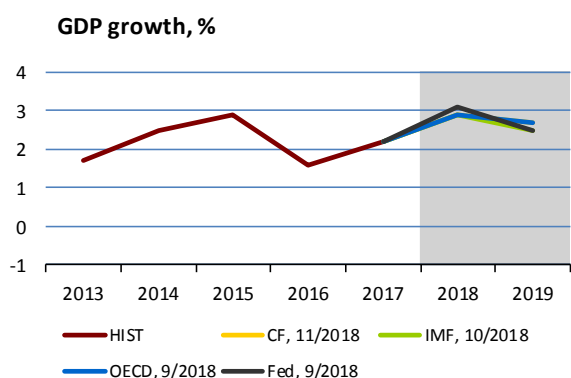
II.3 United States

The US economy slowed slightly in Q3, although by less than financial markets had expected. According to the flash estimate, GDP growth reached 3.5% (in quarter on quarter annualised terms). Consumer spending recorded its largest rise in four years (4% in quarter on quarter annualised terms) and growth in inventories and government expenditure also contributed positively to the growth. By contrast, the trade deficit grew further, mainly due to falling exports of soy, oil and some capital goods. Growth in imports, due primarily to stockpiling by US firms ahead of the introduction of tariffs, acted in the same direction.

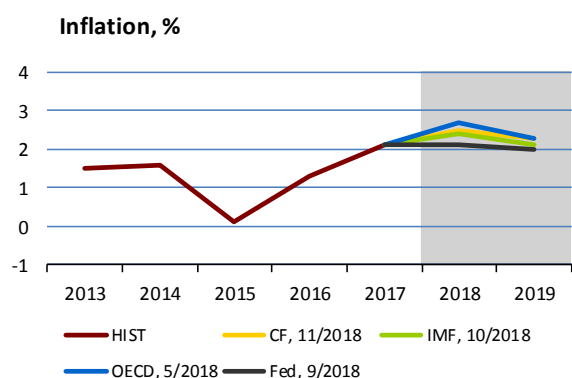
The Atlanta Fed expects a further slowdown below 3% in 2018 Q4. Year-on-year retail sales growth slumped in September and remained below its summer levels in October (4.6%), but consumer confidence remains high. Unemployment was flat at 3.7% in October. Non-farm payrolls rose by 250,000, well above expectations. Average hourly wage growth rose to 3.1% year on year. The good labour market situation continues to fuel demand for housing. However, the housing market is beginning to be affected by higher mortgage rates. Annual industrial production growth reached 4.1% in October.

Headline inflation went up slightly to 2.5% in October, while core inflation remains close to the central bank's target. Inflation pressures are expected to decrease in the coming months as the energy price effect fades out. The US central bank left interest rates unchanged at its November meeting, but is expected to tighten monetary policy further at its December meeting.

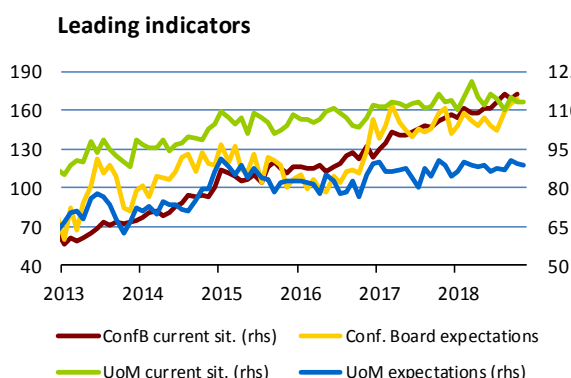
According to the current outlooks, GDP growth in the USA will slow to 2.5%–2.7% in 2019 amid inflation slightly above 2%. The risks are currently on the downside, especially as regards economic growth. The results of the November elections lowered the probability of another round of tax cuts and fiscal stimuli. Increased stock market volatility and continued trade disputes with China remain risks.



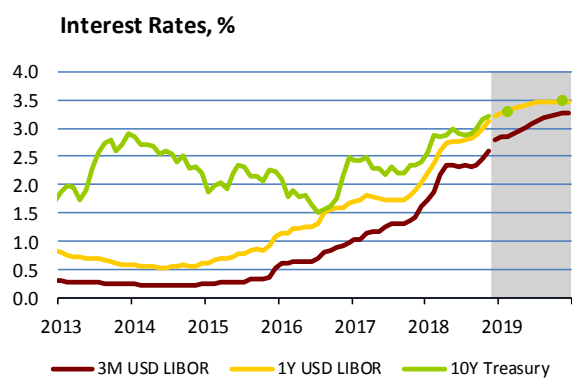
	CF	IMF	OECD	Fed
2018	2.9	2.9	2.9	3.1
2019	2.7	2.5	2.7	2.5



	CF	IMF	OECD	Fed
2018	2.5	2.4	2.7	2.1
2019	2.3	2.1	2.3	2.0



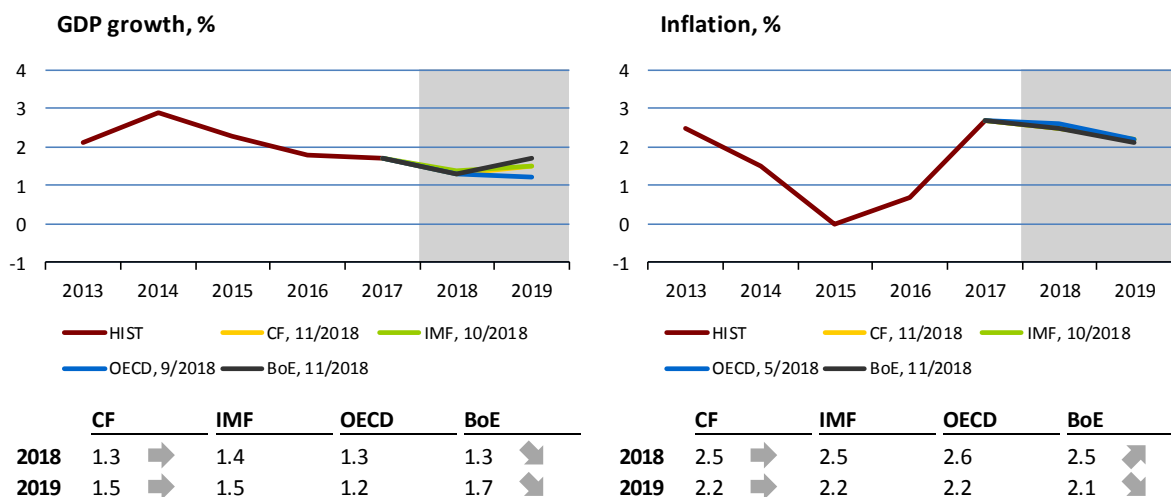
	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
9/18	169.4	112.5	115.2	90.5
10/18	172.8	114.6	113.1	89.3
11/18			113.2	88.7



	10/18	11/18	02/19	11/19
USD LIBOR 3M	2.46	2.60	2.84	3.27
USD LIBOR 1R	2.99	2.99	3.30	3.48
Treasury 10R	3.15	3.20	3.30	3.50

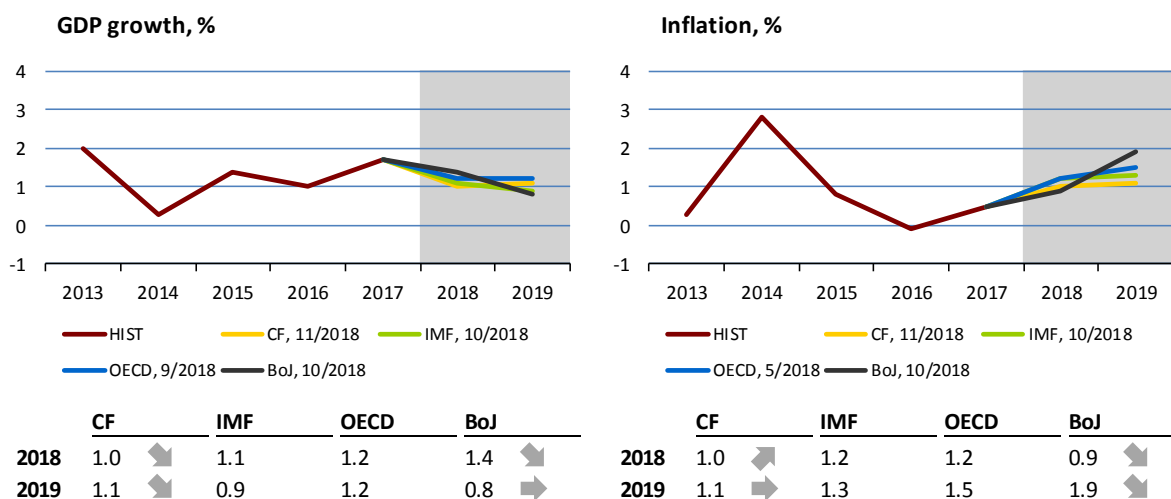
II.4 United Kingdom

The UK economy grew by 0.6% in Q3. It thus significantly outpaced many of its European counterparts. This was due mainly to robust household consumption and external demand. By contrast, corporate investment lagged behind, dropping for the third consecutive quarter. Monthly data show that the economy performed well in July, while the August and September results were markedly worse. Industrial production was flat in both these months and retail sales switched to a decline in September, which continued into October. The PMI in manufacturing dropped to a two-year low in October. Growth is thus expected to slow to 0.4% at the year-end (NIESR). Inflation fell to 2.4% in September and stayed there in October. Core inflation is still fluctuating around 2%. The BoE kept its rates unchanged. In its new projection, it lowered its growth outlook for this year and the next and revised its inflation forecast.



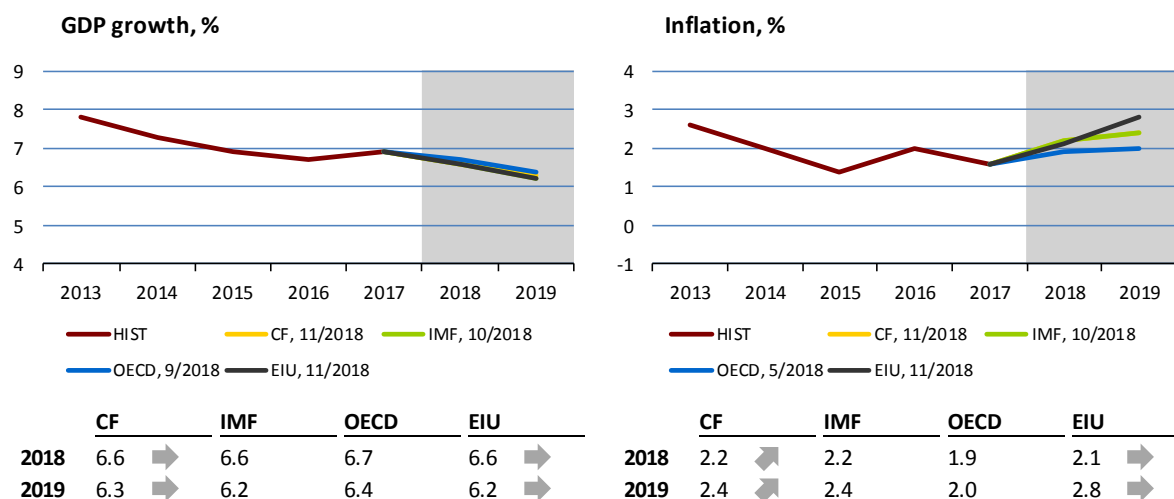
II.5 Japan

According to preliminary estimates, the Japanese economy recorded a GDP contraction of 0.3% in Q3. This was due to summer natural disasters (an earthquake, a typhoon and the worst floods in ten years), which damaged firms and led to a drop in consumption. Still, the PMI in manufacturing reached a four-month high in October (52.9). The exchange rate of the yen against the dollar fluctuated around 113 in October. According to CF, it will strengthen slightly at the one-year horizon. Inflation slowed slightly in September (to 1.2%). Japanese central bank Governor Haruhiko Kuroda hinted that monetary policy could be tightened later than expected. The BoJ's new forecast revised the growth outlook for this year and the inflation outlook for both years downwards. The November CF also lowered its growth outlook, but revised its inflation outlook for this year upwards.



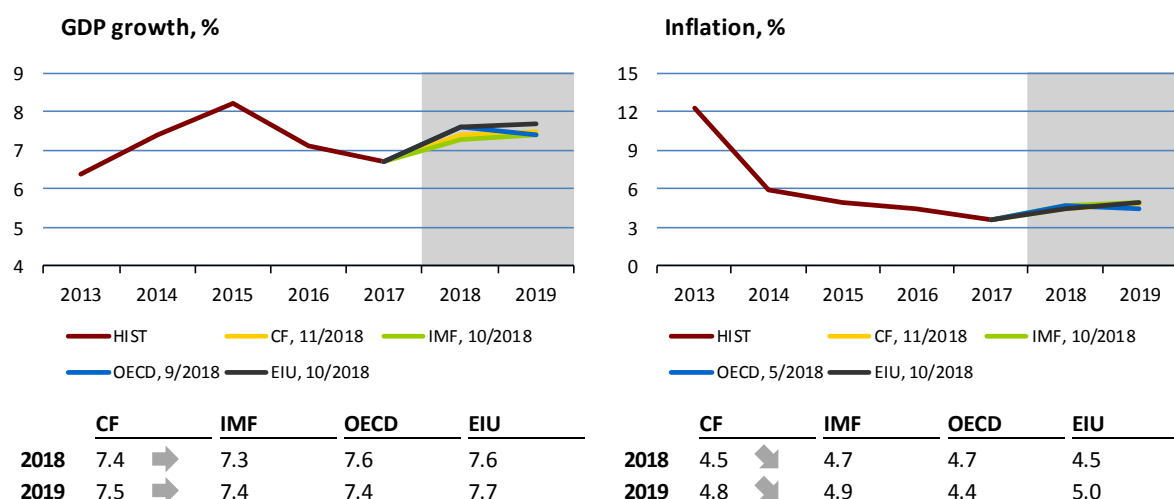
III.1 China

Despite the tariffs, growth in exports from China to the USA remains solid, as shown by the October figures. Exports to the USA went up by 13.2% year on year, while total Chinese exports recorded a full 15.6% year-on-year rise. The trade surplus with the US increased to USD 32 billion. Exports from China to the US are being supported mainly by strong US demand, reflecting stockpiling by US firms. There is also speculation that it might be easier for Chinese companies to find substitutes for imports from the US than for US firms to do the same for imports from China. The trade disputes are also putting depreciation pressure on the renminbi. In an effort to stabilise the exchange rate, the central bank intervened in the market. This caused its forex reserves to drop further. Inflation rose to 2.5% in September and stayed there in October. The new CF subsequently raised the inflation outlook for this year and the next. GDP growth slowed slightly in Q3 (to 6.5% year on year). The growth outlooks for both 2018 and 2019 remained unchanged.



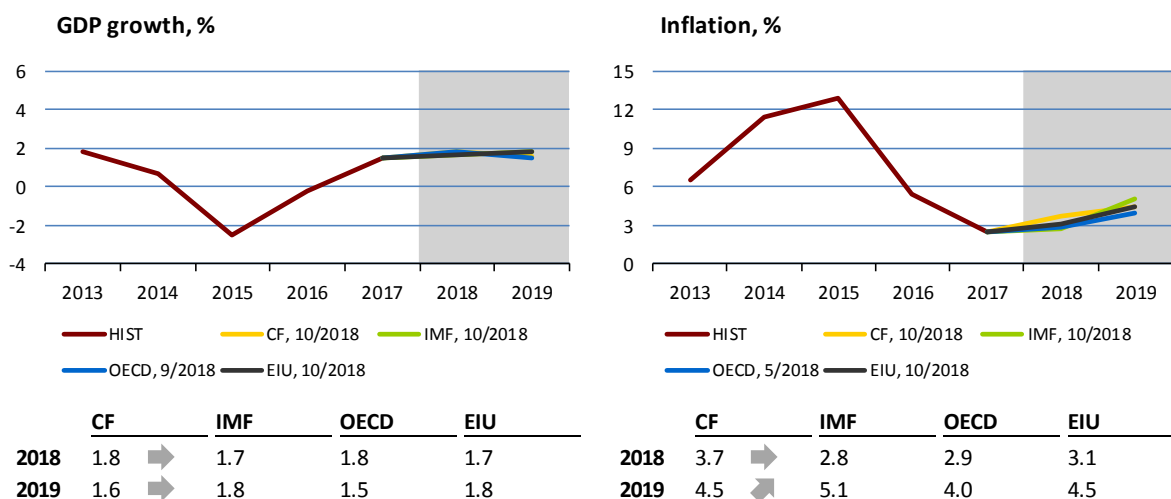
III.2 India

Turning to the Indian economy, GDP growth figures are still only available for 2018 Q2, when the growth reached 8.2% year on year. Information for Q3 will be released at the end of November. However, growth is expected to slow to 7.6%–7.8%. Annual industrial production growth has been slackening gradually since June (to 4.5% in September). The CF outlooks for GDP growth this fiscal year and the next are unchanged at relatively sober levels (7.4% and 7.5%) due to the lack of new data. Inflation fell to 3.3% in October (its lowest level in a year), due mainly to a drop in food prices. The November CF lowered the outlooks for both 2018 and 2019. It expects average inflation to rise from last year's 3.6% to 4.5% this year and on to 4.8% next year. The central bank's monetary policy rate remains at 6.5%. The rupee started to strengthen slightly, from its weakest-ever levels in October (INR 74/USD) to INR 71.8/USD. CF expects an exchange rate of around INR 73/USD one year ahead.



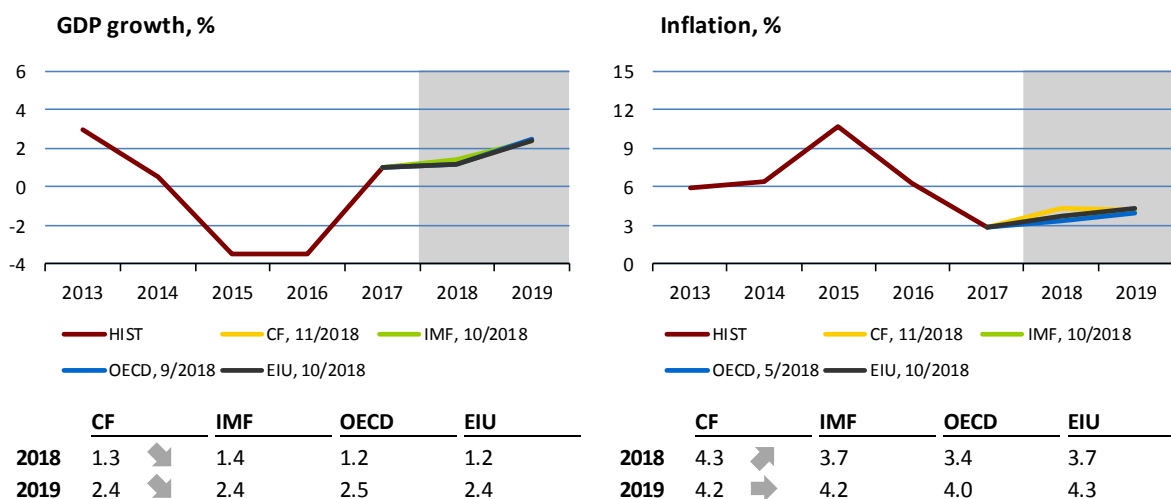
III.3 Russia

According to Rosstat's preliminary estimate, annual Russian economic growth slowed from 1.9% to 1.3% in Q3. The rate of growth of industrial production in September was the lowest this year (2.1%) and lagged behind expectations. The growth was driven by mining (6.9%) and water supply (6.0%). By contrast, manufacturing output dropped slightly year on year in September (despite surging to 3.6% in month-on-month terms). In October, industrial production growth picked up again (to 3.7% year-on-year, and to 2.7% in manufacturing). The PMI in manufacturing returned to the expansion band (51.6) in the same month. The PMI in services rose from 54.7 to 56.9. Consumer price inflation went up only slightly (to 3.5%) in October. The GDP outlook remained unchanged, as did the inflation outlook for this year. CF increased its inflation forecast for next year by 0.2 pp for the second time in a row. It currently expects average inflation of 4.5% for 2019.



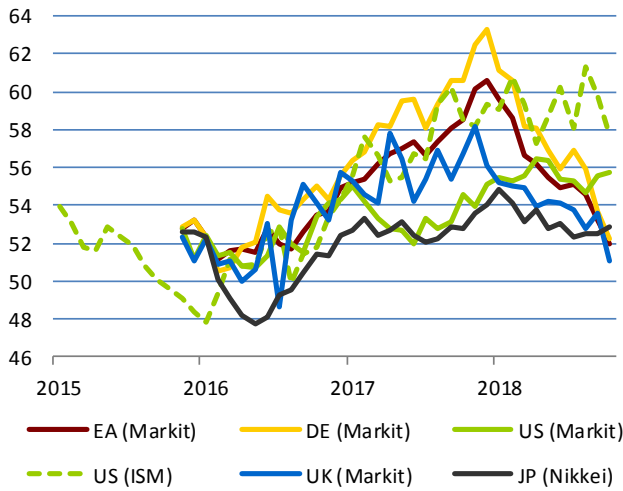
III.4 Brazil

Brazilian industrial output fell 2% year on year in September. The month-on-month growth has been negative for three months now (-1.8% in September). Retail sales showed weak levels as well. By contrast, unemployment fell below 12% in September for the first time this year. The real has reversed its losses and gradually moved towards stronger levels since late September. The Brazilian currency briefly gained more strongly immediately after the presidential elections, which were won by far-right candidate Jair Bolsonaro, but then started to depreciate moderately. CF has been lowering the GDP growth outlook for both this year and the next for more than six months now. The figure expected for 2018 has been reduced from 2.7% to 1.3%. CF expects 2.4% growth next year. Inflation stayed close to 4.5% in October. CF raised its outlook for this year to 4.3%. The outlook for next year is unchanged.

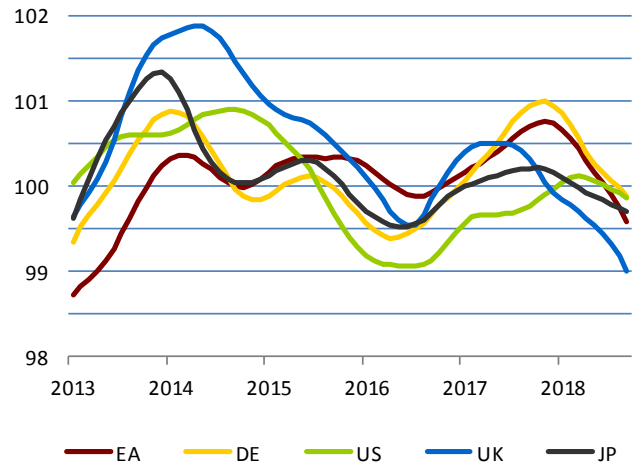


IV.1 Advanced economies

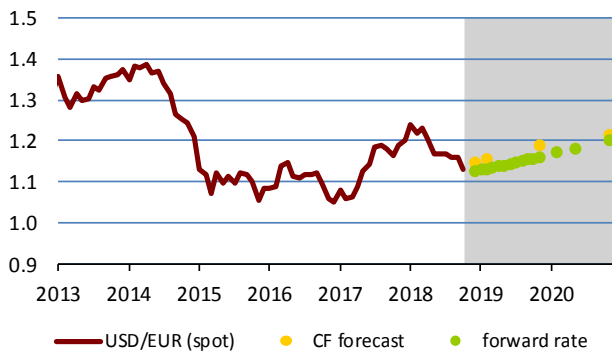
PMI in manufacturing



OECD Composite Leading Indicator

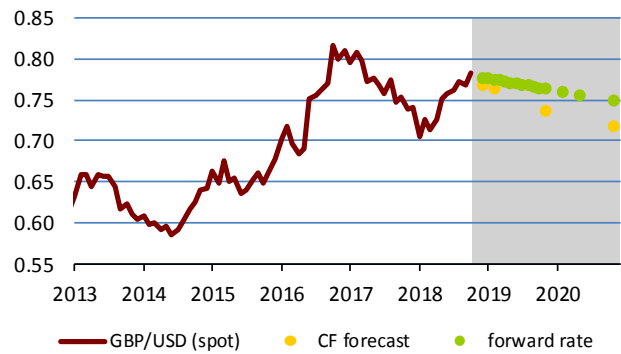


The US dollar (USD/EUR)



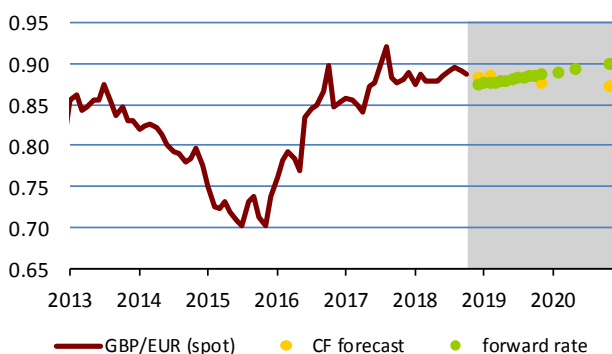
	12/11/18	12/18	02/19	11/19	11/20
spot rate	1.125				
CF forecast		1.149	1.156	1.191	1.216
forward rate		1.124	1.132	1.161	1.202

The British pound (GBP/USD)



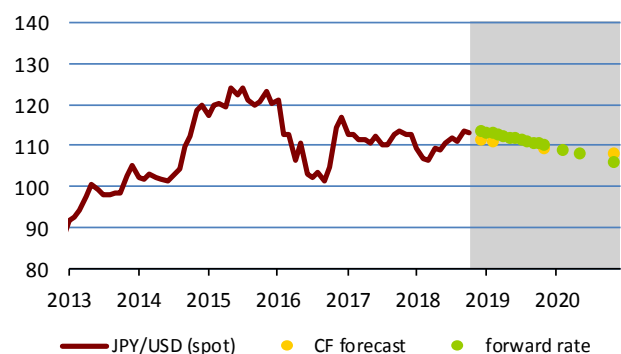
	12/11/18	12/18	02/19	11/19	11/20
spot rate	0.777				
CF forecast		0.768	0.765	0.736	0.718
forward rate		0.777	0.774	0.764	0.749

The British pound (GBP/EUR)



	12/11/18	12/18	02/19	11/19	11/20
spot rate	0.874				
CF forecast		0.882	0.884	0.876	0.873
forward rate		0.874	0.876	0.886	0.900

The Japanese yen (JPY/USD)

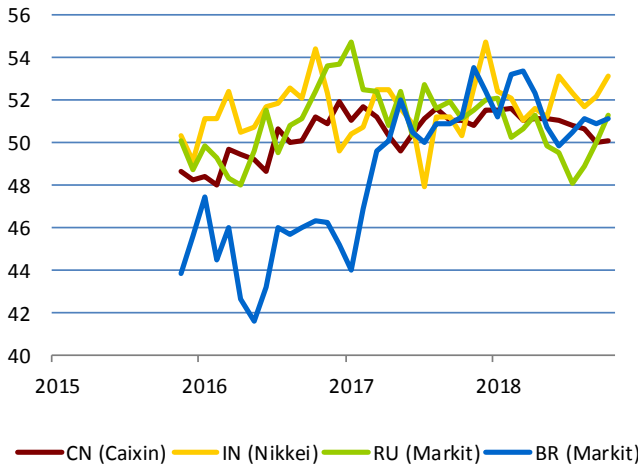


	12/11/18	12/18	02/19	11/19	11/20
spot rate	113.8				
CF forecast		111.5	111.0	109.3	107.9
forward rate		113.6	112.9	110.1	106.1

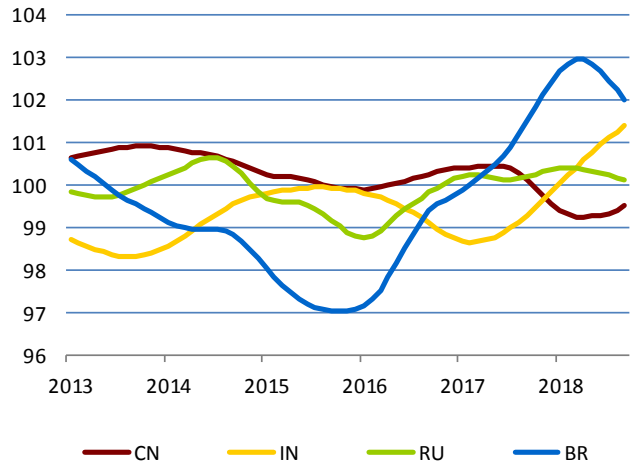
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.2 BRIC countries

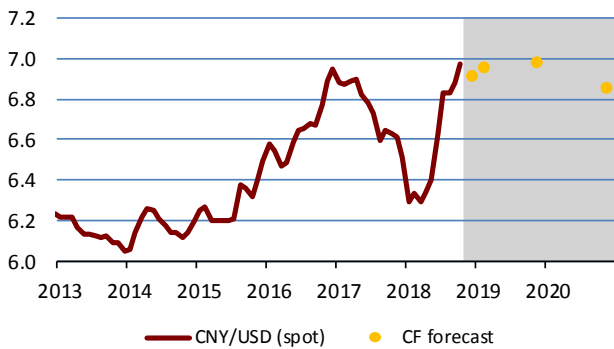
PMI in manufacturing



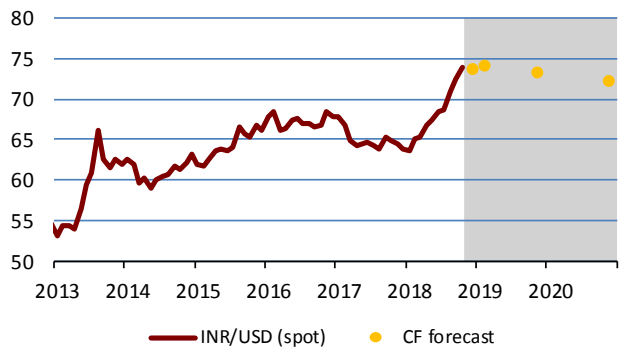
OECD Composite Leading Indicator



The Chinese renminbi (CNY/USD)



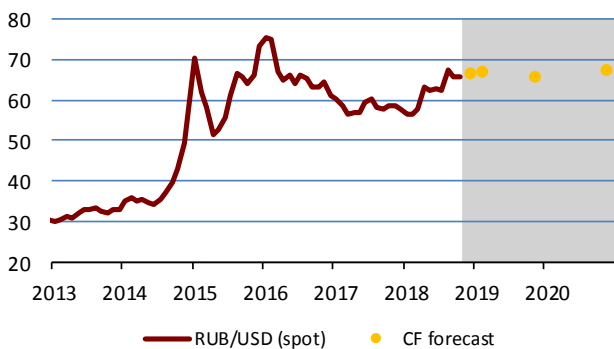
The Indian rupee (INR/USD)



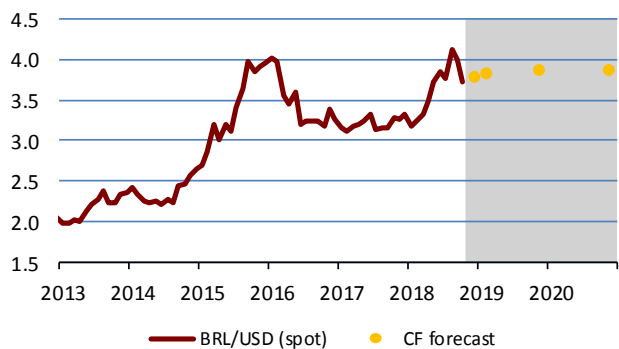
	12/11/18	12/18	02/19	11/19	11/20
spot rate	6.966				
CF forecast		6.914	6.959	6.977	6.854

	12/11/18	12/18	02/19	11/19	11/20
spot rate	72.93				
CF forecast		73.58	74.20	73.36	72.24

The Russian rouble (RUB/USD)



The Brazilian real (BRL/USD)



	12/11/18	12/18	02/19	11/19	11/20
spot rate	67.72				
CF forecast		66.41	66.81	65.77	67.18

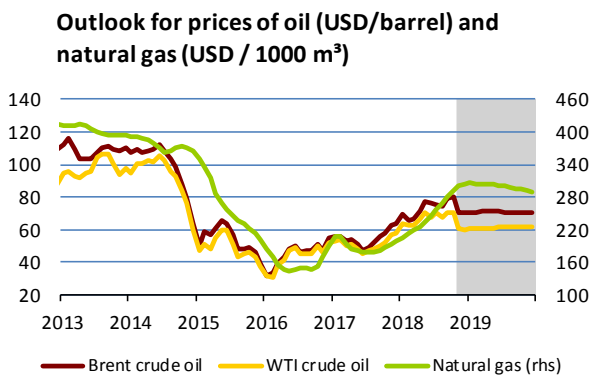
	12/11/18	12/18	02/19	11/19	11/20
spot rate	3.758				
CF forecast		3.775	3.834	3.859	3.861

Note: Exchange rates as of last day of month.

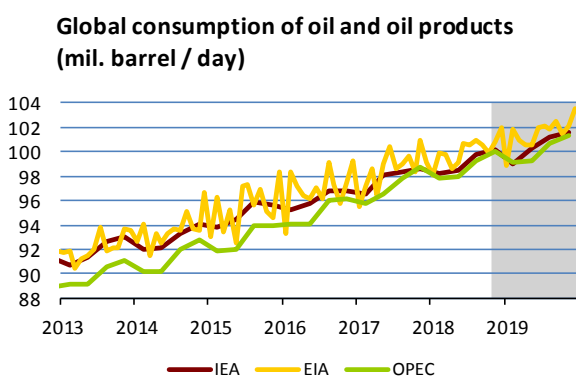
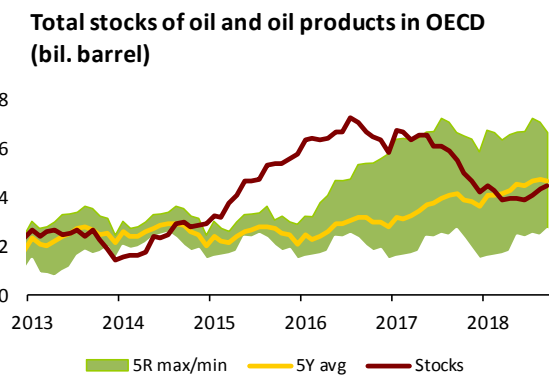
V.1 Oil and natural gas

The Brent crude oil price rose to a four-year high in early October due to rapidly falling exports from Iran and concerns about whether the other OPEC countries and Russia would be able to make up for the shortfall. The trend then reversed and the oil price started to fall. Increasingly distinct signs of a global economic slowdown led to growth in volatility on financial markets and sell-offs of risky assets, including shares and commodities. The related appreciation of the dollar further accelerated the oil price fall. Fundamentals also had a significant impact. Russia and Saudi Arabia raised their oil output to historical highs in October. Production in Libya, the USA and Canada also exceeded expectations, while the drop in Venezuela slowed. The oil glut in the USA is being reflected in strong growth in US oil stocks. Chinese economic growth was lower than expected, and some other countries' leading indicators also worsened. Together with continued depreciation of emerging economies' currencies, this is raising concerns that demand for oil will slow in the coming months. It was also reflected in revisions of most forecasts. The drop in oil prices accelerated further in early November when the USA allowed a six-month waiver for limited Iranian oil imports to the eight largest buyers. The Brent price stopped falling just above USD 65/bbl (and the WTI price above USD 55/bbl) as OPEC signalled with increasing force that it was considering capping output and exports.

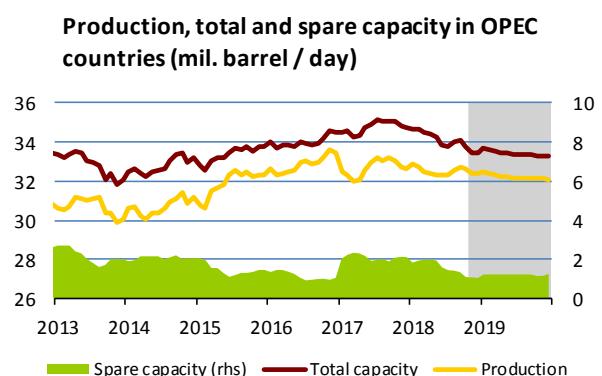
In line with prices, the market futures curve shifted down substantially, signalling an average price of around USD 70/bbl both for the rest of this year and for 2019 as of the November CF survey date, The November CF does not fully reflect the current slump yet and expects prices to be around USD 5/bbl higher. The EIA expects an average Brent crude oil price of around USD 72/bbl for 2019.



	Brent	WTI	Natural gas
2018	72.99	66.01	253.66
2019	70.70	61.11	299.22



	IEA	EIA	OPEC
2018	99.15	100.06	98.78
2019	100.51	101.51	100.07



	Production	Total capacity	Spare capacity
2018	32.50	34.06	1.55
2019	32.20	33.41	1.21

Source: Bloomberg, IEA, EIA, OPEC, CNB calculation

Note: Oil price at ICE, average gas price in Europe – World Bank data, smoothed by the HP filter. Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic) in OECD countries – IEA estimate. Production and extraction capacity of OPEC – EIA estimate.

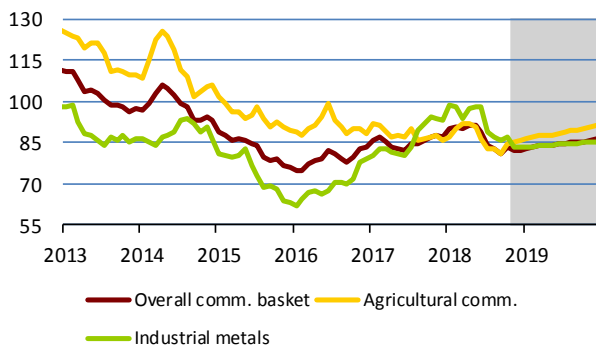
V.2 Other commodities

The four-month decline in the aggregate non-energy commodity price index halted in October. Following a slight correction, the index was roughly at its August level in mid-November. Its outlook is slightly rising, due mainly to an increasing outlook for the food commodity price sub-index. After hitting an 11-year low in September, the sub-index grew in the following two months. By contrast, the industrial metals price sub-index weakened again to a 16-month low in the first half of November after recording a temporary rise in October. Nevertheless, its outlook is also slightly rising.

Base metal prices remain squeezed by the continued global manufacturing slowdown and particularly by the slower economic growth in China. The J.P.Morgan Global Manufacturing PMI fell to another two-year low of 52.1 in October. Its new exports component improved slightly but remains in the contraction band. Copper and zinc prices stayed higher after rising in September due to a continued fall in stocks at the LME. The iron ore price bucked the trend, having risen at a solid rate since July. By contrast, the coal price fell slightly due to a seasonal cooling of demand in East Asia and restrictions on imports to China.

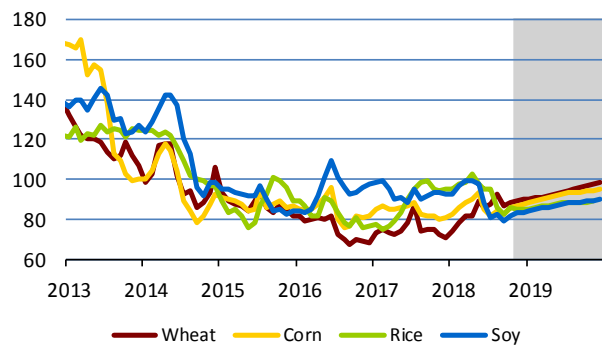
The wheat price has been broadly flat since mid-May, although its outlook remains rising. A similar trend has also been observed for corn, rice and soy prices over the last few months. By contrast, sugar, coffee and cocoa prices have displayed strong growth in the past month. The price of beef also increased, while the price of pork is at a seasonal low and is expected to rise sharply. As for non-food agricultural commodities, the rubber price remains at its lowest level in many years.

Non-energy commodities price indices



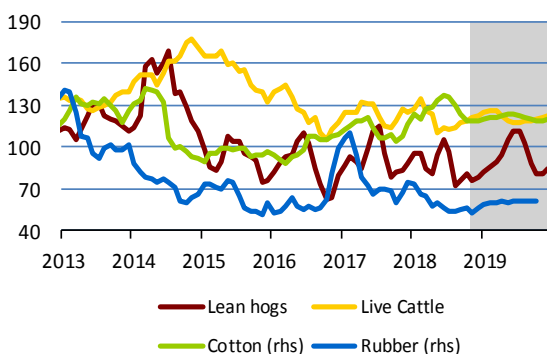
	Overall	Agricultural	Industrial
2018	86.5	86.7	91.7
2019	84.6	88.7	84.4

Food commodities



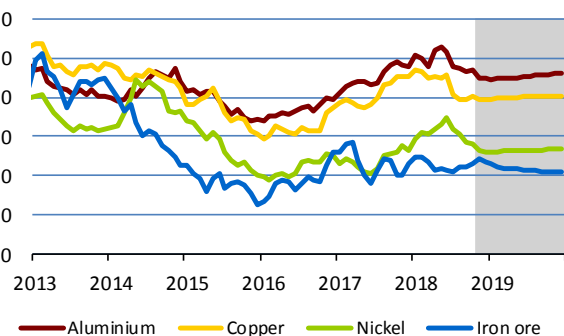
	Wheat	Corn	Rice	Soy
2018	85.5	86.3	92.2	88.8
2019	94.0	92.4	87.5	87.4

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2018	86.3	120.4	87.6	42.7
2019	93.2	121.3	84.1	43.8

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2018	97.1	85.3	60.4	45.7
2019	90.6	80.0	52.8	43.1

Source: Bloomberg, CNB calculations.

Note: Structure of non-energy commodity price indices corresponds to composition of The Economist commodity indices. Prices of individual commodities are expressed as indices 2010 = 100.

The UK productivity puzzle: Why is productivity barely growing?¹

The United Kingdom is one of the world's most advanced economies. The living standards of its population can thus be considered very high by global comparison. Sufficient "progress" is a necessary condition for maintaining this supreme position in the future. However, the productivity of the UK economy has shown no major growth for ten years now. As a result, the other advanced countries are slowly but surely leaving it behind. This article summarises the debate on the possible causes of this unpleasant trend and gives some potential solutions. It concludes with a simple simulation to illustrate what economic impacts could be expected if the UK fails to solve the problem.

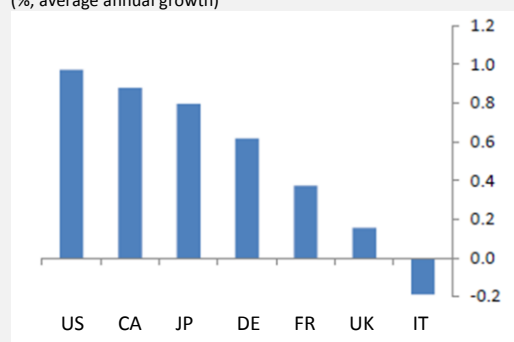
The lost decade

Productivity is a key economic variable and has an indirect impact on the satisfaction and quality of life of the population. Productivity growth is a prerequisite for sustainable wage growth. Although these two variables may diverge in the short term, real wages cannot go up if productivity stagnates in the longer run. If nominal wages outpace productivity, rising inflation and loss of competitiveness ensue. However, productivity growth not only benefits workers, but also helps employers make bigger profits. This leads to higher dividend payouts to shareholders and possibly to lower prices for consumers. The government meanwhile collects more tax revenue, which it then redistributes into the economy by funding state policies. Put simply, welfare rises if society produces economic goods more efficiently (i.e. is more productive). Box 1 explains how productivity is monitored in practice.

Since the financial crisis, the UK has been experiencing an unusually long period of almost zero productivity growth referred to as the "productivity puzzle". It should be noted, though, that this is not an entirely new issue for the UK.² A paper examining the reasons for the insufficient productivity growth in the UK economy during the second half of the 1990s came out in the early 2000s (Basu et al., 2003). It later turned out, however, that the problem was due to mismeasurement, and this puzzle disappeared following data revisions.³ All the more striking is the slump in productivity during the financial crisis followed by a decade of largely zero growth (see Chart 1).⁴

Chart 2 – Labour productivity growth, 2007–2016

(%; average annual growth)

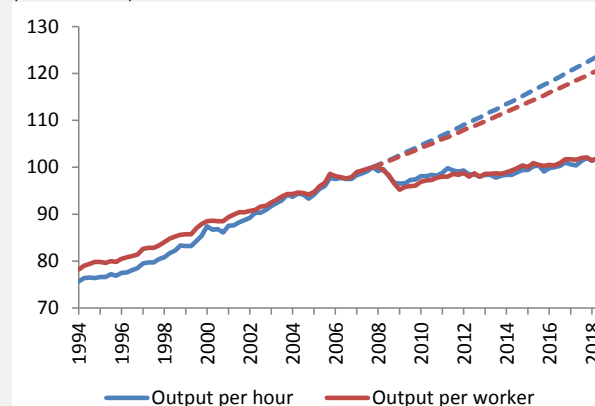


Source: Tenreyro (2018)

Note: Productivity measured by constant price GDP per hour worked; US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, UK – United Kingdom, IT – Italy

Chart 1 – UK labour productivity before and after the crisis

(2007 Q4 = 100)



Source: Office for National Statistics

Note: Output measured by nominal GVA; dashed curves represent the pre-crisis trend (1994–2007; ONS calculations).

The crisis affected productivity in most advanced economies, but the UK is performing noticeably worse than the rest. This is illustrated in Chart 2, which compares post-crisis productivity growth in the G7 countries. No G7 economy has recorded average annual growth of over 1%. Until the crisis, the UK had been used to labour productivity growth of around 2%. In 2007–2016, however, the growth was down to less than one-tenth of its previous level. Among the G7 countries, only Italy fared worse, and even it remains more efficient than the UK in absolute terms (see Chart 3). Average labour productivity in the other G7 countries is a full 18% higher than in the UK.

¹ Author: Pavla Růžičková. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank.

² This article discusses the state officially called the United Kingdom of Great Britain and Northern Ireland (the United Kingdom for short).

³ Tenreyro (2018)

⁴ Quarterly productivity growth has averaged 0.0% between the start of 2008 and the present in terms of both GVA per hour worked and GVA per worker. The average year-on-year growth rates have been 0.3% and 0.2% respectively.

Box 1 – Definition and measurement of productivity

In economics, productivity means the relationship between output and the inputs needed to produce it. However, there are countless definitions and interpretations of the term. It is most often viewed as a measure of the performance of factors of production. These generally include, for example, natural resources, labour, capital, information and knowledge.

Output is the total amount of value produced.

In the case of a firm, it may be the number of units produced (cars, for example) or the monetary value of production. In macroeconomic terms, it is the total output of the economy, most often expressed using either gross domestic product (GDP; or some similar concept such as gross national product or national income) or gross value added (GVA). The two types of indicator are usually strongly correlated. By definition, the following relation holds: $GVA = GDP - \text{taxes} + \text{subsidies}$.

As for inputs, greatest attention is paid to labour and capital. Labour is most often expressed by the total number of hours worked or persons employed. The first approach is more accurate, as it is undistorted by variety of

employment characteristics such as usual shift length, extent of a part-time work and overtime. On the other hand, the number of hours worked is much more volatile than the number of employees or total economic output. This makes the latest known figures harder to interpret. Capital productivity then expresses the return on investment.

Multi-factor productivity (also known as total factor productivity) offers a different perspective. It measures the part of production growth which cannot be explained by change in the use of labour and capital (in terms of amounts). It is usually interpreted as the rate of efficiency with which labour and capital are used.

Each approach therefore yields a different type of information. Put simply, growth in labour productivity can be due to either growth in the quality of human capital or growth in financial capital. The concept as defined above thus does not differentiate between growth in the quality of a given input (labour) and growth in the use of other inputs. By contrast, multi-factor productivity expresses the overall qualitative change in the use of all inputs, as it abstracts from the effect of quantitative changes in inputs on production.

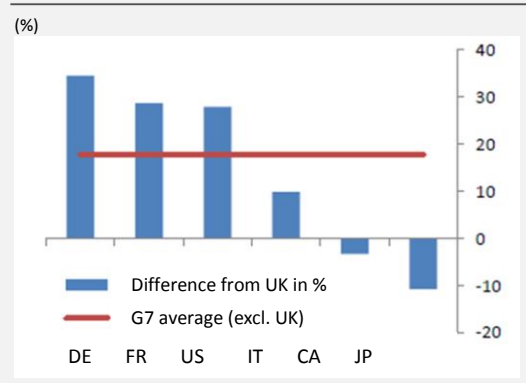
It takes a British worker five days to produce what a French worker finishes by noon on Thursday. Needless to say, Germany leads the field in productivity.⁵

The search for the causes

The simple explanation that the financial crisis is responsible for the low productivity growth in the UK economy is therefore unsatisfactory. The impact of the crisis is, of course, significant. Progress with streamlining economic activity has halted largely because of a general crisis of confidence and investment appetite, which, at a time of uncertainty, has led to insufficient capital investment and a widespread fear to innovate. This change in sentiment is a direct consequence of the financial crisis. However, it cannot entirely explain why the UK is lagging behind the other advanced economies and why the situation is not improving even ten years after the crisis. The search for the possible causes of the UK productivity puzzle thus goes much deeper than just to the secular stagnation theory.⁶

There is a fairly widespread perception that the puzzle is in fact due partly to mismeasurement of economic activity. The official statistics are believed to underestimate actual growth in economic output because they fail to fully capture the expansion of the digital economy. According to estimates, the difference in growth may be as much as 0.5 percentage point a year in the UK.⁷ This then directly affects the derived growth in productivity. The counterargument, however, is that mismeasurement of economic activity probably already existed long before the financial crisis erupted, when labour productivity was growing at a solid rate.⁸ Yet this can be countered with

Chart 3 – Labour productivity in the G7, 2016



Source: Tenreyro (2018)

Note: Productivity measured by constant price GDP per hour worked; DE – Germany, FR – France, US – USA, IT – Italy, CA – Canada, JP – Japan

⁵ Germany's high labour productivity level largely reflects successful labour market reforms implemented in 2003–2005.

⁶ This theory is based on the idea that stagnation is a natural property of the economy. Economic growth only occurs if there is sufficient technological progress and innovation. A lack of profitable investment opportunities leads to an increase in the saving rate, cuts in production and a slowdown in economic growth. The phenomenon was described by Summers (2013) and Gordon (2014), for example. The topic has also been covered in *Global Economic Outlook* by Benecká et al. (2017).

⁷ Haldane (2017).

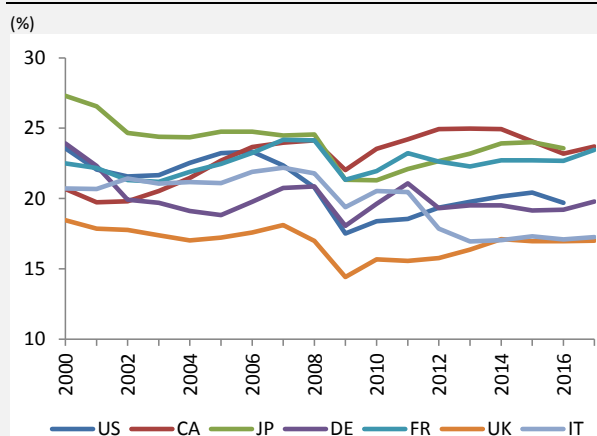
⁸ See, for example, Syverson (2016), who analyses the slowdown in productivity growth in the USA.

simple anecdotal evidence: the smartphone boom – one of the technological revolutions of recent times – did not occur until after 2007. The fundamental question remains, however, whether the mismeasurement argument is more relevant to the UK than to other developed countries. The G7 economies all have broadly similar sector structures, with services accounting for 70%–80% of GDP. The significance of the digital economy is more difficult to gauge. According to the OECD (2017a), the share of IT specialists in total employment, for example, is rather higher in the UK than in the other G7 countries.⁹ By contrast, the UK differs little in terms of IT investment. With a figure of 2.3% of GDP, it was roughly in the middle of the selected set of countries in 2015. So, it does not seem that mismeasurement can satisfactorily explain the low productivity growth in the UK.

The UK economy is unique in its focus on financial services, so the productivity puzzle may have its origin in this sector. The mismeasurement of economic output may not relate solely to the expansion of the digital economy, but may also be a consequence of innovation in the financial industry. As new types of products appear, it is becoming increasingly difficult to define what economic output is and how to measure it correctly. It may be that before the crisis, due to the general optimism and boom in this sector, its activity (and hence productivity) was overestimated, whereas after the crisis it was underestimated.¹⁰ Yet this does not convincingly explain the current productivity puzzle. It would only mean that actual productivity growth slowed a little earlier and was then rather more favourable than the official statistics suggest. This would not change much in the UK's gap behind other advanced economies.

Another possible cause of the low productivity growth is substitution of capital by labour. The problem with the UK economy is that the investment rate has long been low, much lower than is usual in other advanced economies (see Chart 4). As in other countries, the ratio of investment to GDP fell sharply with the onset of the crisis. The subsequent recovery has been very sluggish and the investment-to-GDP ratio in the UK remains below its pre-crisis peak. According to Pessoa and Van Reenen (2014), this is due to the flexibility of the UK labour market,¹¹ which facilitated a drop in real wages after the crisis. Firms thus probably prioritised labour ahead of capital in a situation of heightened uncertainty. At the same time, amid concerns about future economic developments, households increased their supply of labour, further increasing the downward pressure on real wages.¹² Migration also played a role. As an advanced economy with a minimal language barrier, and still being a participant in the European single market with free movement of labour, the UK naturally attracts workers from abroad. In a flexible labour market environment, this further intensifies the competition on the labour supply side. Chadha (2017) points out that this results in a rather atypical equilibrium of low wages, low productivity and high employment. In this sense, low productivity growth is the price paid for low unemployment.¹³ However, unemployment is now

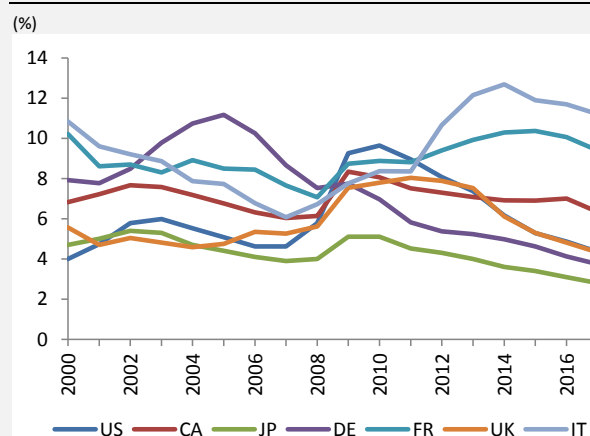
Chart 4 – Capital investment to GDP ratios



Source: World Bank

Note: US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, UK – United Kingdom, IT – Italy

Chart 5 – Unemployment rates



Source: World Bank, GlobalEconomy.com

Note: US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, UK – United Kingdom, IT – Italy

⁹ The figure is about 5% in the UK, roughly 1 pp lower in the USA, just under 4% in Germany, 3% in France and slightly lower still in Italy. Data are not available for Japan. Only Canada has similar levels to the UK. All the data are for 2016.

¹⁰ Tenreyro (2018).

¹¹ However, according to the Employment Flexibility Index compiled by the Lithuanian Free Market Institute (2017), the UK is lagging only slightly behind the USA and Japan, followed closely by Canada. That said, the index is compiled using selected data which do not cover all aspects of labour market regulation.

¹² Tenreyro (2018) asserts that the uncertainty triggered by the crisis hit the UK harder than other countries due to the larger share of the financial industry in economic activity there. The Economic Policy Uncertainty Index supports this conclusion (see Chart 6).

¹³ Unemployment is currently at its lowest level since the mid-1970s, at just 4%.

low in many other advanced economies (see Chart 5). In the USA it is roughly at the same level as in the UK, and in Germany and Japan it is even lower. Yet the low unemployment in those countries is not at the expense of investment or productivity growth, or at least not as much as it is in the UK.

Brexit, of course, is a specifically British problem. The related uncertainty is weighing on the UK economy and undermining the willingness to invest. The spectre of Brexit has been looming over the UK for some time now. It first received greater attention in January 2013, when the then UK Prime Minister David Cameron opened a debate on negotiating new terms for the UK's membership of the EU, telling UK citizens they would have their say on both the planned reform and membership itself in a referendum.¹⁴ The uncertainty about future UK–EU trade arrangements triggered by the above debate and particularly by the result of the subsequent referendum is adversely affecting investors' willingness to start new projects. More than two years after the referendum, the vision for future UK-EU relations has still acquired no specific form. Meanwhile, Brexit is approaching fast – it is scheduled for the end of March 2019. Chart 6 shows clearly that economic policy uncertainty has long been much higher in the UK than in the other G7 countries. It thus probably explains a large part of the difference in investment between the countries under review and the UK economy's aforementioned tendency to substitute labour for capital.

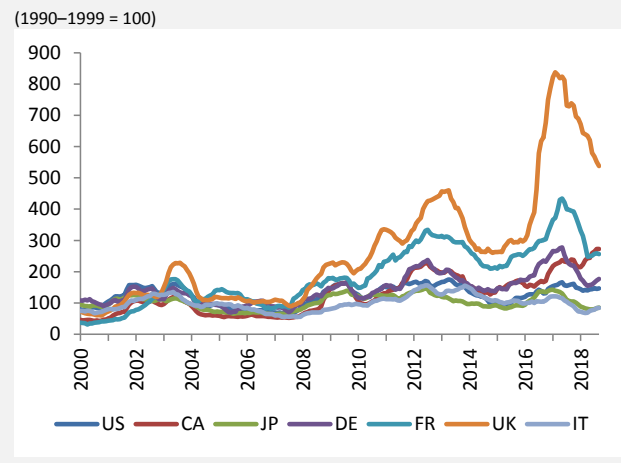
Significant inequalities across regions are also increasingly mentioned as a cause of the many problems of the UK economy. The capital city is a strong centre, and the rest of the country looks like an economic periphery by comparison. London is a major global financial centre, and the financial sector is the main driver of the UK economy. This is reflected in large differences in productivity across the country. Ebell (2017) shows that productivity in London exceeds the UK average by a barely imaginable 72%. Outside London, productivity is above the average in just one of the UK's twelve regions (the neighbouring South East, which, however, exceeds the average by just 10%). In half of the regions, the productivity level is less than half that of London.¹⁵ The unusually high inequality in productivity levels in the UK is confirmed by statistics from the OECD (2017b). A comparison of 25 countries reveals the UK to have the largest gap between the most and least productive region.¹⁶ Simultaneously, in no other country is the difference in productivity between the first and the second most productive regions as high as in the UK.

The large regional imbalances in economic productivity prevent technological progress from spreading effectively across economy, further slowing overall productivity growth. According to BoE Chief Economist Andy Haldane,¹⁷ firms operating at the technological frontier are becoming increasingly productive, while companies lagging behind in productivity have been unable to keep up, much less catch up, with them. This runs counter to the basic assumptions of economic theory. Technological diffusion is a necessary condition for economic convergence. As only a small fraction of UK companies are at the technological frontier, the productivity of the economy as a whole is stagnating as a result. The insufficient technological diffusion¹⁸ may be explained by stifled competition in some sectors due, for example, to restrictions on patents and intellectual property or network economies of scale generating natural monopolies in today's globalised world.

Possible solutions

Although there is no consensus in the economic community on the causes of the particularly low UK productivity growth, a widely shared recommendation is to increase investment. Both the public and private sectors have room to do so. At the government level, investment in the UK accounts for only about 2.5% of GDP,¹⁹ well below the OECD average. The UK's relatively high government debt²⁰ is

Chart 6 – Economic Policy Uncertainty Index



Source: Baker et al. (2015), PolicyUncertainty.com

Note: One-year moving average rates; US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, UK – United Kingdom, IT – Italy

¹⁴ For more details, see Břízová (2017).

¹⁵ The statistics describe productivity in terms of GVA per head. Using the alternative measure of GVA per worker, the regional inequalities in productivity are somewhat smaller because the factor of commuting is taken into account (the output produced in a region is divided not by its population but by number of workers producing it; for more details see Ebell, 2017). However, data are not available for all UK regions.

¹⁶ Measured by GVA per worker.

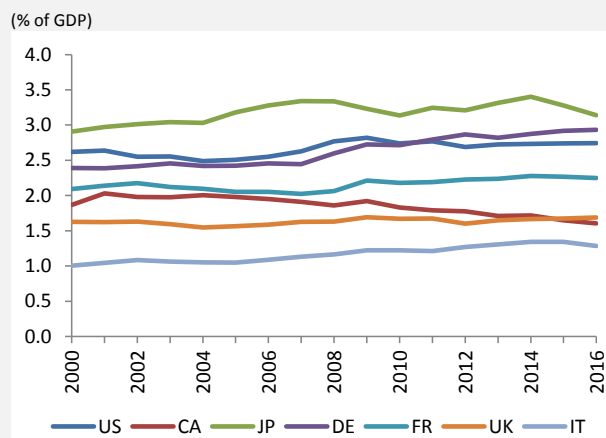
¹⁷ Haldane (2017)

¹⁸ The UK ranked down in 38th place for knowledge diffusion (Cornell University, INSEAD and WIPO, 2017).

¹⁹ OECD (2017c)

a problem, as the government's efforts to reduce it are hindering investment growth. Investment would need to be increased in infrastructure, which, with the exception of London, has long been underfunded. The second area to which money should go to give the maximum boost to productivity is R&D. The UK regularly spends only around 1.6% of GDP on research, as compared to almost double that figure in Japan and around 2.5% of GDP in Germany and the US (see Chart 7). Only about one-third of R&D investment in the UK is funded from public budgets.²¹ It is reasonable to assume that private investment in research is more effective, as it can better target research that can be applied in practice. However, the counter-argument that firms are limited in their investment plans by a much shorter investment horizon than that which the state can afford is heard ever more frequently. Firms' sensitivity to uncertainty about investment returns is meanwhile much higher. Moreover, if there are positive externalities, which tend to be significant in the R&D area, the return on a specific investment is lower for a private investor than it is for the government.

Chart 7 – R&D expenditure



Source: OECD

Note: US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, UK – United Kingdom, IT – Italy

the UK is funded from public budgets.²¹ It is reasonable to assume that private investment in research is more effective, as it can better target research that can be applied in practice. However, the counter-argument that firms are limited in their investment plans by a much shorter investment horizon than that which the state can afford is heard ever more frequently. Firms' sensitivity to uncertainty about investment returns is meanwhile much higher. Moreover, if there are positive externalities, which tend to be significant in the R&D area, the return on a specific investment is lower for a private investor than it is for the government.

Structural changes in corporate investment funding could boost the private sector's willingness to invest. Haldane (2017, 2018) points out a current problem. Intangible assets, such as intellectual property, constitute an increasing fraction of companies' assets, especially in advanced economies. Unlike tangible assets (factories and plant and machinery), however, intangible assets are difficult to measure. This means they are not

valued sufficiently by potential financial investors and lenders in their decisions to finance corporate investment. This raises the cost of capital for such firms to sub-optimally high levels, causing a market failure. If this market failure was remedied, investment growth and hence productivity growth could rise. However, another of Haldane's proposals – to draw inspiration from the well-developed system of corporate funding by banks in place in Germany – has a much bigger chance of success in practice. Whereas the most productive UK firms have no problem securing venture capital for their investment plans, smaller and less well-established companies, which are typically less productive, tend not to attract the attention of capital markets. These firms would benefit from easier access to funding via banks. Lending to the corporate sector currently accounts for just 6% of banks' assets in the UK, as compared to 18% in Germany.

Close cooperation between companies within supply chains could help solve the problem of insufficient technological diffusion. If companies at the tops of these chains supported their suppliers more actively and helped them improve their productivity, they themselves would subsequently benefit from the better productivity.²² The question is why this is not happening very often in the UK. In a perfect market environment, companies at higher supply chain levels should be actively seeking out such opportunities themselves if they enable them to make bigger profits. If the market imperfection stems from mere ignorance and distrust of technological leaders, the problem can be solved by raising awareness and launching support projects.²³ However, if the current practice is rather a result of tough competition among leaders, the proposal to support sharing of knowledge with suppliers cannot work very well if it is impossible to enforce exclusive cooperation with suppliers so that direct competitors of the mentor company cannot benefit from the technological support it provides.

Proposals to create an app informing companies about how they fare in productivity compared to others go even further. The idea was proposed by the UK Productivity Commission.²⁴ It is based on the assumption that many companies think their relative productivity is better than it actually is. The availability of microdata providing comparisons with others could motivate lagging firms' managers to streamline production. Again, however, it is surprising that the prospect of higher profits itself fails to provide such an incentive in a market environment. Another proposal calls for the mass use of virtual environments enabling companies to simulate complex production processes and then relatively cheaply test alternatives to find more efficient solutions. However, small firms lack the capacity to create such environments themselves.

²⁰ It stood at 85.3% of GDP at the end of 2017. Of the G7 countries, however, only Germany has a lower government debt.

²¹ Chadha (2017)

²² This practice is well-developed in Germany, for example. Cooperation between private firms and universities also works very well there.

²³ Several such projects in the UK are coordinated at the national level by the *Be the Business* initiative supported and funded by the UK government.

²⁴ Mayfield (2016)

They would have to use ones provided by larger companies, for example in the context of cooperation within supply chains. Alternatively, the state would have to take the initiative.²⁵

What's at stake

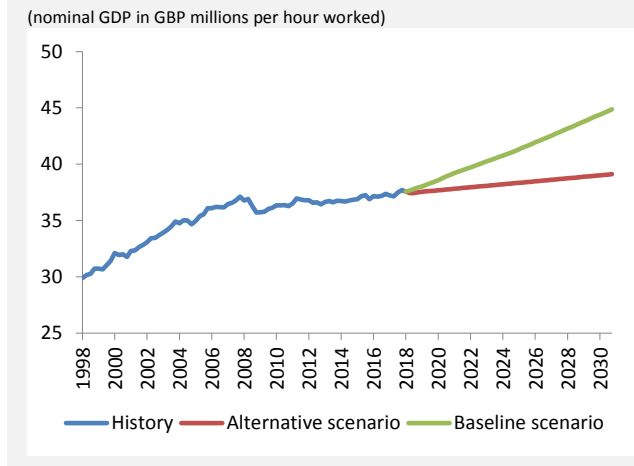
UK labour productivity growth is projected to start rising again gradually in the near future.

A higher minimum wage coupled with lower net migration could increase labour market tightness even further in a situation of very low unemployment (the lowest since the mid-1970s). This could stimulate growth in corporate investment, which would in turn boost productivity growth. The current forecasts²⁶ calculate productivity growth at around 1.0% this year, accelerating to 1.3% next year and peaking at 1.5% subsequently. Nobody expects a return to the 2% growth commonly seen before the financial crisis. However, a high degree of uncertainty surrounds even the more modest forecasts. Virtually all institutions have been unsuccessfully predicting a recovery in productivity since it nose-dived in 2008.²⁷ Most of them have at least reined in their expectations of renewed growth over time. However, none of them has been able to explain why their forecasts have repeatedly failed to materialise and why productivity has been rising at an annual rate of only around 0.5% for years now.

Failure by the UK to resolve its productivity puzzle and continued weak labour productivity growth would have fundamental impacts on UK economic growth.

Productivity growth projections are a fairly important input to the GDP growth forecasts for any economy. A simple simulation using the NIGEM model shows what would happen if the UK productivity growth projections were adjusted such that the expected renewed growth (the baseline scenario; the August NIESR prediction) was replaced by a sceptical outlook consisting in a continuation of the current weak growth trend (the alternative scenario).²⁸ Chart 8 shows the difference in the productivity paths in the two scenarios. Given the failures of previous forecasts, the chosen calibration of the alternative scenario can be viewed as a still plausible but very pessimistic outlook. Chart 9 illustrates the impact of lower productivity growth on the economy. It depicts the different predictions of UK GDP growth. In the baseline scenario economic growth fluctuates around 1.8% a year in the long run, whereas in the low productivity growth scenario it is just 0.7%. Such weak GDP growth is due mainly to slow productivity growth giving rise to lower potential growth.

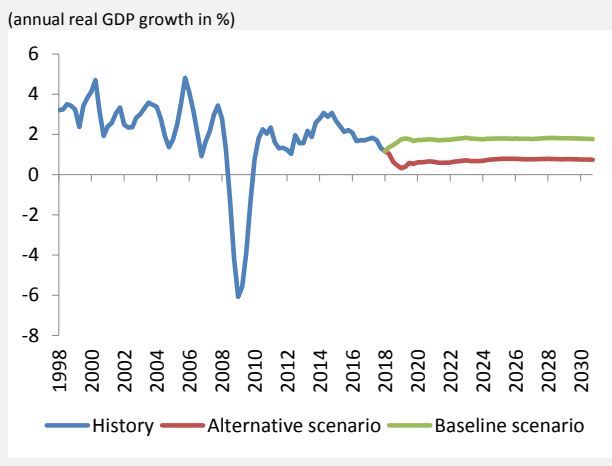
Chart 8 – Simulation of a continued productivity puzzle



Source: NIGEM, author's calculations

Note: The alternative scenario is calibrated as a continuation of the trend observed since the end of 2009

Chart 9 – Impact of the simulation on UK GDP growth



Source: NIGEM, author's calculations

Note: The alternative scenario is calibrated as a continuation of the labour productivity trend observed since the end of 2009

It depicts the different predictions of UK GDP growth. In the baseline scenario economic growth fluctuates around 1.8% a year in the long run, whereas in the low productivity growth scenario it is just 0.7%. Such weak GDP growth is due mainly to slow productivity growth giving rise to lower potential growth.

The outlined scenario would affect other world economies only minimally.

The UK's largest trading partner is clearly the euro area (the destination of 48% of UK exports and the source of 52% of UK imports). The impact of the alternative scenario on its economic growth would be less than one-fifth of that on the UK economy, although it would still be perceptible (a deviation in annual growth of almost -0.2 pp; see Chart 10).²⁹ By contrast, economic activity in the G7 countries would be negligibly affected by a continued puzzle of low

²⁵ Haldane (2018)

²⁶ For example, the BoE's prediction contained in its August Inflation Report (BoE, 2018) and the August NIESR forecast (Kara et al., 2018).

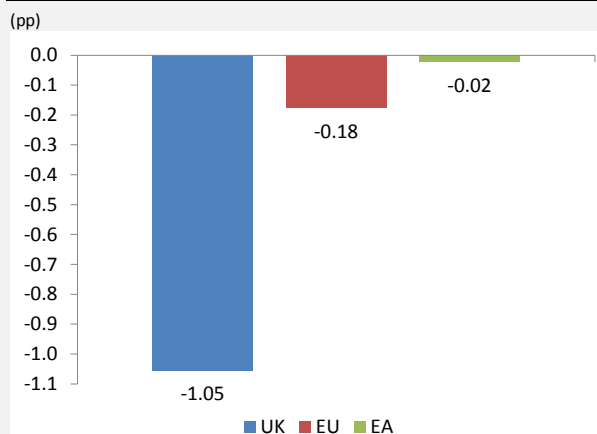
²⁷ Assessments of the forecasts of the Office for Budget Responsibility and the NIESR can be found, respectively, in Bell and Blanchflower (2018) and Kazalova and Naisbitt (2018), for example.

²⁸ The shock to labour-augmenting technological progress was calibrated so that the resulting impact on labour productivity corresponded to a continuation of the growth trend seen between 2010 Q1 and 2018 Q1.

²⁹ The impact on Czech economic growth was estimated in the simulation at -0.03 pp relative to the baseline scenario.

UK productivity growth (see Chart 11). The interest in uncovering the true causes of the phenomenon of low labour productivity growth and finding suitable solutions as soon as possible thus lies mainly with the UK.

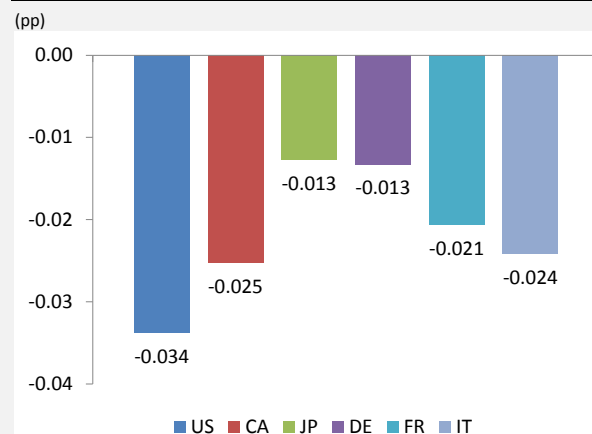
Chart 10 – Comparison of the impacts of lower UK productivity growth on UK, EU and euro area GDP growth



Source: NIGEM, author's calculations

Note: Average deviation of year-on-year growth in 2018–2030; UK – United Kingdom, EU – European Union, EA – euro area

Chart 11 – Impacts of lower UK productivity growth on the GDP growth of the other G7 countries



Source: NIGEM, author's calculations

Note: Average deviation of year-on-year growth in 2018–2030; US – USA, CA – Canada, JP – Japan, DE – Germany, FR – France, IT – Italy

Conclusion

In light of the comparison with other advanced economies, the low labour productivity growth in the UK can truly be called a puzzle. Economists have put a great deal of effort into analysing the data from the UK economy from various points of view, but have yet to identify exactly the causes of the problem. In general, under-investment seems the most likely cause. However, it is still unclear how specifically this adverse situation should be remedied – whether the indebted government or private entities should invest more, and what exactly they should invest in. Brexit is playing a significant but difficult to quantify role in the entire situation. The related uncertainty – from the initial mentions of a Brexit referendum to the current protracted negotiations on the specific configuration of EU–UK relations after Britain leaves the Union – is negatively affecting sentiment in the economy and weighing heavily on economic agents' investment decisions.

Failure by the UK to find a solution to its productivity puzzle would have serious consequences for its future economic development and in turn for the living standards of its people. The latest UK labour productivity growth figures are mixed. Measured by economic output per worker, annual productivity growth has been running at about 1.2% for four consecutive quarters since 2016 Q4. However, the growth rate approached zero again at the end of last year. By contrast, annual growth in productivity per hour worked has been more or less accelerating since mid-2017 and reached 1.5% in 2018 Q2. Nevertheless, both series are very volatile and sometimes simply diverge, despite having usually shown similar historical patterns. The main reason for the current gap is a sharp drop in hours worked, which has been going on in the UK since the middle of last year. It is thus too early to say whether things are looking up for the UK.³⁰

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³⁰ Preliminary estimates of economic activity and labour productivity for the third quarter of this year were published after this article had been written. Year-on-year growth in output per hour worked virtually halted (at just 0.1%) despite an acceleration in economic growth. Unfortunately, therefore, there still seems to be no cause for optimism.

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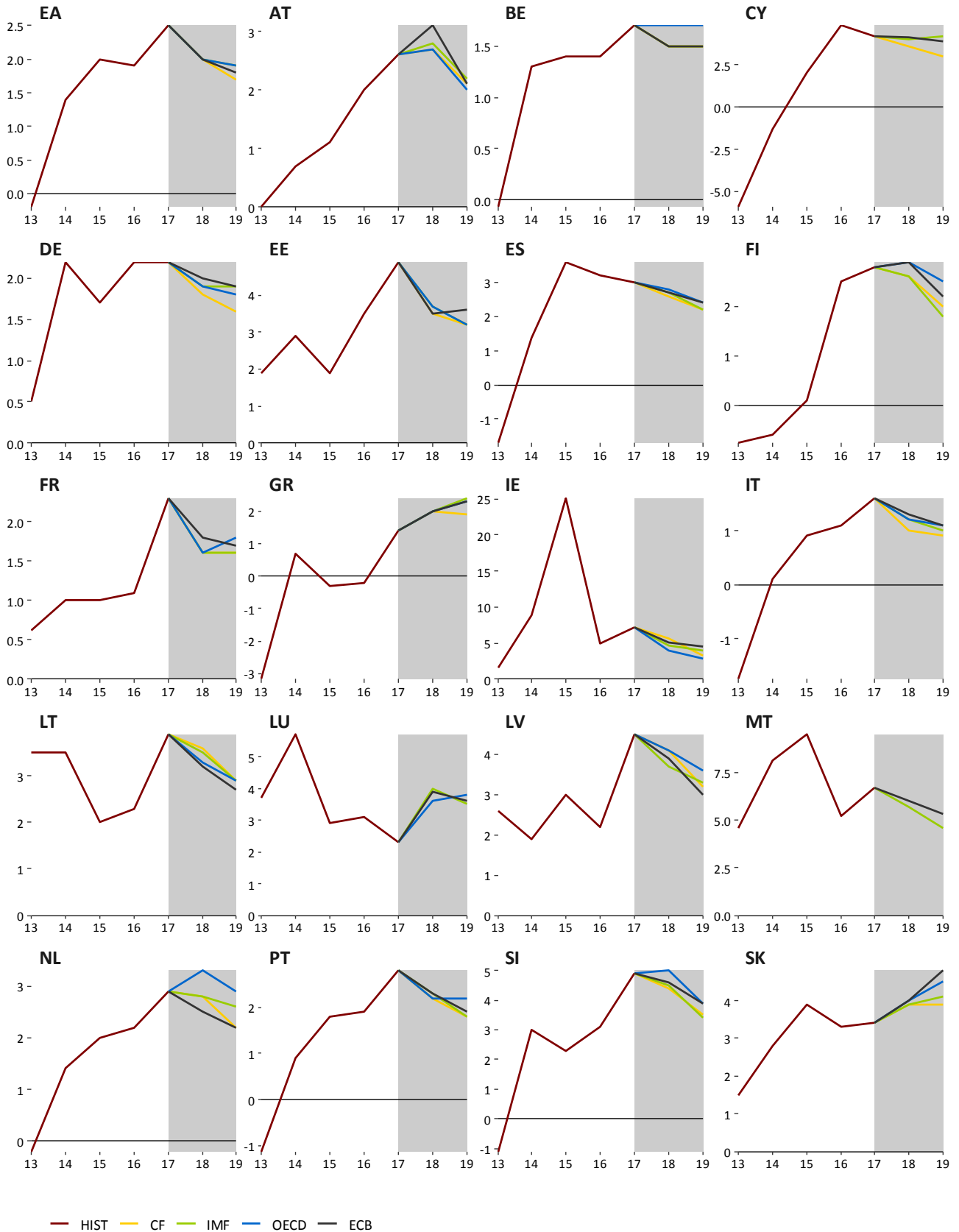
A1. Change in GDP predictions for 2018

	CF		IMF		OECD		CB / EIU	
EA	0	2018/11	-0.2	2018/10	-0.2	2018/9	-0.1	2018/9
		2018/10				2018/7		
DE	-0.1	2018/11	-0.3	2018/10	-0.2	2018/9	-0.5	2018/6
				2018/10				2018/7
US	0	2018/11	0	2018/10	0	2018/9	+0.3	2018/9
				2018/10				2018/7
UK	0	2018/11	0	2018/10	-0.1	2018/9	-0.1	2018/11
				2018/10				2018/7
JP	-0.1	2018/11	+0.1	2018/10	0	2018/9	-0.1	2018/10
				2018/10				2018/7
CN	0	2018/11	0	2018/10	0	2018/9	0	2018/11
				2018/10				2018/7
IN	0	2018/11	0	2018/10	+0.2	2018/9	+0.2	2018/10
				2018/10				2018/7
RU	0	2018/10	0	2018/10	0	2018/9	0	2018/10
				2018/9				2018/7
BR	-0.1	2018/11	-0.4	2018/10	-0.8	2018/9	-0.3	2018/10
				2018/10				2018/7

A2. Change in inflation predictions for 2018

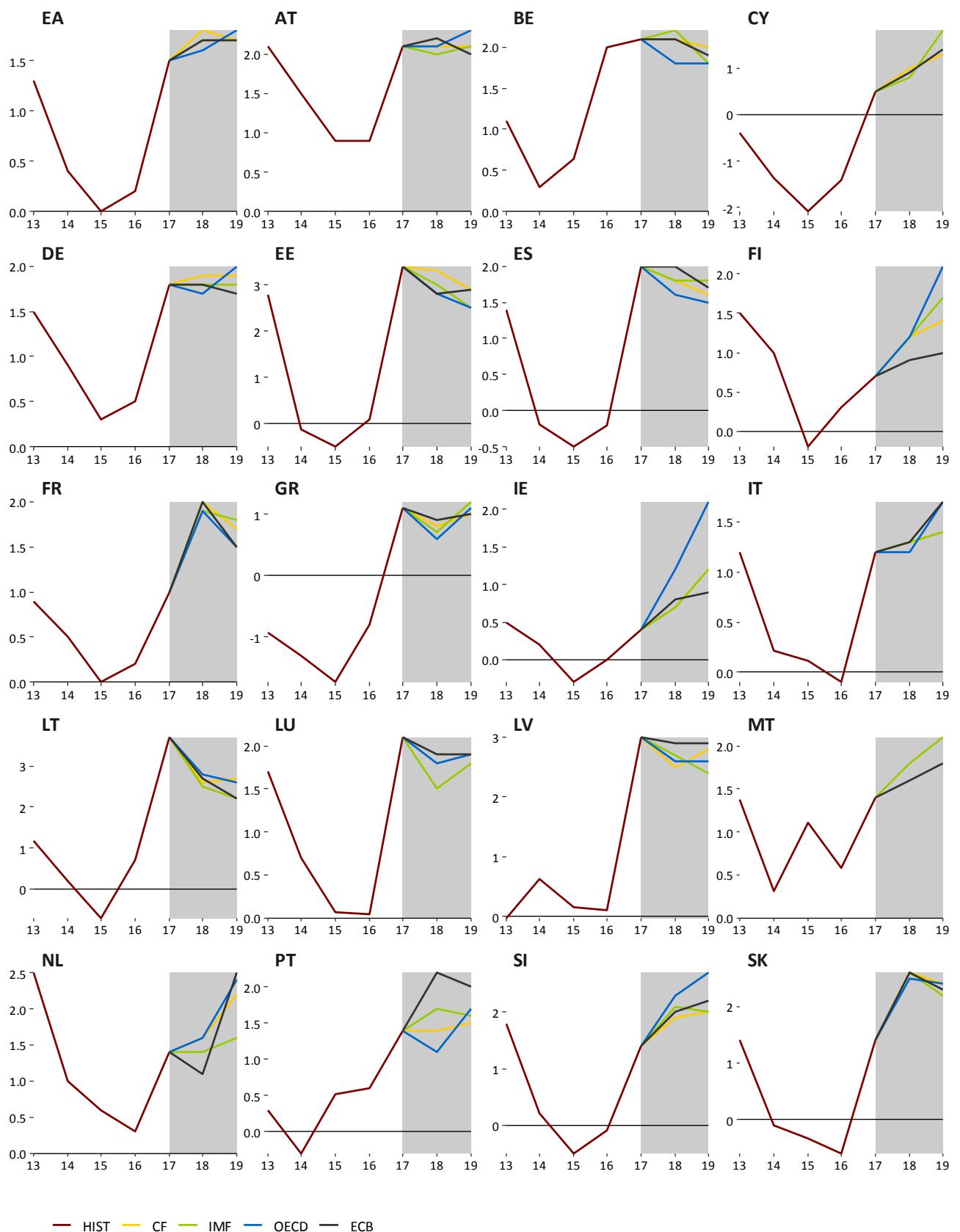
	CF		IMF		OECD		CB / EIU	
EA	+0.1	2018/11	+0.2	2018/10	+0.1	2018/5	0	2018/9
				2018/10				2018/4
DE	0	2018/11	+0.2	2018/10	-0.1	2018/5	+0.2	2018/6
				2018/10				2018/4
US	0	2018/11	-0.1	2018/10	+0.7	2018/5	0	2018/9
				2018/10				2018/4
UK	0	2018/11	-0.2	2018/10	0	2018/5	+0.2	2018/11
				2018/10				2018/4
JP	+0.1	2018/11	+0.1	2018/10	+0.2	2018/5	-0.2	2018/10
				2018/10				2018/4
CN	+0.1	2018/11	-0.3	2018/10	+0.1	2018/5	0	2018/11
				2018/10				2018/4
IN	-0.2	2018/11	-0.3	2018/10	+0.1	2018/5	-0.2	2018/10
				2018/10				2018/4
RU	0	2018/10	0	2018/10	-0.9	2018/5	0	2018/10
				2018/9				2018/4
BR	+0.1	2018/11	+0.2	2018/10	-0.5	2018/5	0	2018/10
				2018/10				2018/4

A3. GDP growth in the euro area countries



Note: The chart shows institutions' latest available outlooks of for the given country (in %).

A4. Inflation in the euro area countries



Note: The chart shows institutions' latest available outlooks of for the given country (in %).

A5. List of abbreviations

AT	Austria	IE	Ireland
bbl	barrel	IEA	International Energy Agency
BE	Belgium	IFO	Leibniz Institute for Economic Research at the University of Munich
BoE	Bank of England (the UK central bank)	IMF	International Monetary Fund
BoJ	Bank of Japan (the central bank of Japan)	IN	India
bp	basis point (one hundredth of a percentage point)	INR	Indian rupee
BR	Brazil	IRS	Interest Rate swap
BRIC	countries of Brazil, Russia, India and China	ISM	Institute for Supply Management
BRL	Brazilian real	IT	Italy
CB	central bank	JP	Japan
CBR	Central Bank of Russia	JPY	Japanese yen
CF	Consensus Forecasts	LIBOR	London Interbank Offered Rate
CN	China	LME	London Metal Exchange
CNB	Czech National Bank	LT	Lithuania
CNY	Chinese renminbi	LU	Luxembourg
ConfB	Conference Board Consumer Confidence Index	LV	Latvia
CXN	Caixin	MKT	Markit
CY	Cyprus	MT	Malta
DBB	Deutsche Bundesbank (the central bank of Germany)	NIESR	National Institute of Economic and Social Research (UK)
DE	Germany	NKI	Nikkei
EA	euro area	NL	Netherlands
ECB	European Central Bank	OECD	Organisation for Economic Co-operation and Development
EE	Estonia	OECD-CLI	OECD Composite Leading Indicator
EIA	Energy Information Administration	PMI	Purchasing Managers' Index
EIU	Economist Intelligence Unit	PP	percentage point
ES	Spain	PT	Portugal
ESI	Economic Sentiment Indicator of the European Commission	QE	quantitative easing
EU	European Union	RBI	Reserve Bank of India (central bank)
EUR	euro	RU	Russia
EURIBOR	Euro Interbank Offered Rate	RUB	Russian rouble
Fed	Federal Reserve System (the US central bank)	SI	Slovenia
FI	Finland	SK	Slovakia
FOMC	Federal Open Market Committee	UK	United Kingdom
FR	France	UoM	University of Michigan Consumer Sentiment Index - present situation
FRA	forward rate agreement	US	United States
FY	fiscal year	USD	US dollar
GBP	pound sterling	USDA	United States Department of Agriculture
GDP	gross domestic product	WEO	World Economic Outlook
GR	Greece	WTI	West Texas Intermediate (crude oil used as a benchmark in oil pricing)
ICE	Intercontinental Exchange	ZEW	Centre for European Economic Research

