

GLOBAL ECONOMIC OUTLOOK - AUGUST

Monetary Department
External Economic Relations Division

2017

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Cut-off date for data

11 August 2017

CF survey date

7 August 2017

GEO publication date

18 August 2017

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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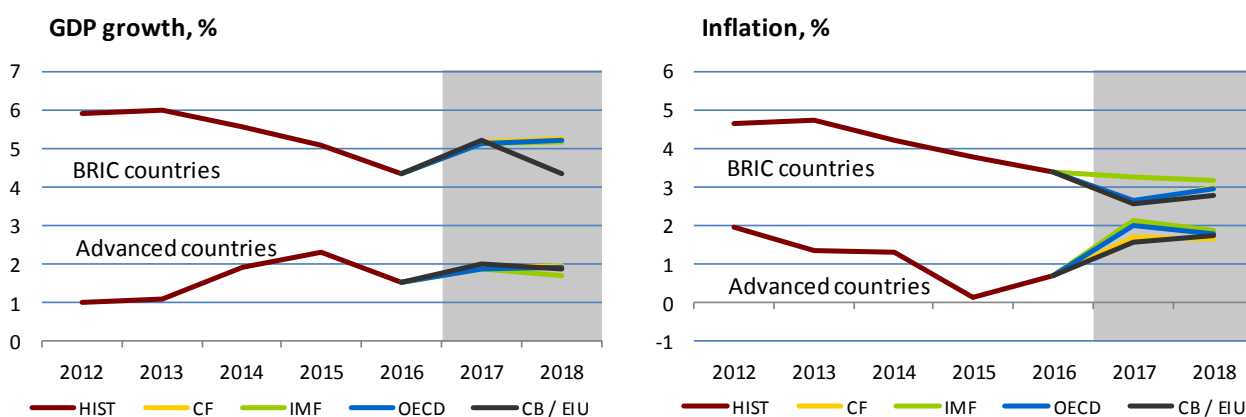
The August issue of Global Economic Outlook presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. In this issue, we continue our summer mini-series on the economic impacts of Brexit on the United Kingdom. In the July issue, we focused on the short-term effects, whereas this issue summarises the conclusions of the most important studies analysing Brexit from the longer-term perspective. These studies concur that the UK economy will lose out by leaving the EU, a prediction that is gradually being confirmed by actual economic developments. However, it is still difficult to estimate the real extent of the economic impacts of Brexit, as it will depend primarily on the terms negotiated between the UK and the EU. In our analysis, we therefore present the main possible scenarios quantifying how much the UK will pay for Brexit in terms of loss of GDP.

The current economic outlooks for the advanced countries we monitor are sending out a clear message of a pick-up in expected economic growth (especially in the euro area). The inflation outlooks are still visibly below the notional 2% ideal. The euro area recorded its fastest annual GDP growth in six years. Growth of about 2% is expected for this year and the next. The situation in its strongest economy, Germany, is similar. However, Germany will grow at a slightly slower rate than the euro area as a whole. The US economy will probably end this year with lower economic growth than that expected in July. Next year, however, it will accelerate to 2.4%. The GDP growth and inflation outlooks for the UK and Japan were little changed from the previous month. However, those countries' central banks made revisions to their forecasts. Of the advanced countries under review, only the UK will see inflation exceeding the 2% level in the period up to the end of 2018. This is related to the ongoing Brexit.

The August forecasts confirmed GDP growth outlooks of about 7.5% for the Indian economy amid relatively low inflation. There was similar confirmation for the Chinese economy, whose expected economic growth was raised slightly for this year and confirmed at 6.3% for next year. This is good news for the global economy. The outlooks for the less dynamic BRIC countries (Russia and Brazil) diverged considerably last month. In Q2, the Russian economy recorded its highest annual GDP growth figure since 2012. Its economic growth estimates for this year were revised upwards to 1.4%. Inflation of about 4% is expected for both this year and the next. By contrast, the Brazilian economy is languishing. Its outlooks were lowered again (to 0.4% in the case of GDP growth this year). Some – albeit weakening – optimism is still expected for next year, when the Brazilian economy should see a visible recovery accompanied by a drop in inflation pressures.

The outlooks for short-term euro area interest rates remain very low and negative across maturities at the one-year horizon. At one-year maturity they are expected to turn positive in 2018 H2. In the case of the USA, the upward pressures on interest rates can be expected to ease due to reduced inflation expectations, and will probably not re-emerge until the end of this year. According to CF, the US dollar will appreciate at the one-year horizon against all the monitored currencies except the Russian rouble, against which it will be broadly stable. The outlook for the average Brent crude oil price has returned to just above USD 52 a barrel. Prices of non-energy commodities are expected to rise slightly at the one-year horizon, driven up by food commodity prices.

GDP growth and inflation development and outlook in monitored countries

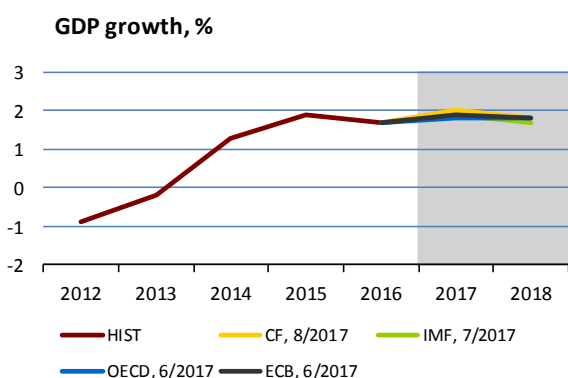


Note: The figures represent the weighted averages of historical series / outlooks in individual countries. The weights are based on nominal GDP measured in USD during 2011–2015 (source: EIU). Advanced countries: euro area, United States, United Kingdom, Japan. BRIC countries: China, India, Russia, Brazil.

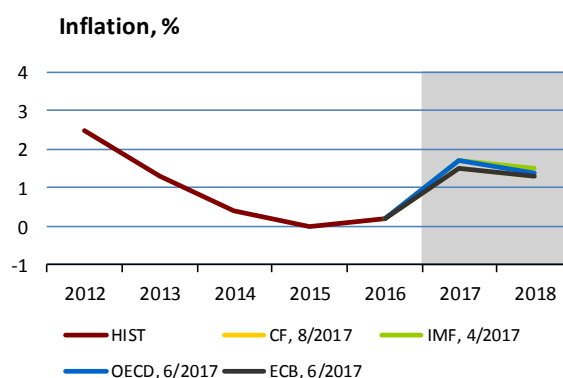
II.1 Euro area

Quarterly GDP growth in the euro area increased to 0.6% in 2017 Q2. In year-on-year terms, the growth accelerated to 2.1%, the highest figure in six years. Over the rest of this year, the growth is expected to continue at a relatively solid rate, as confirmed, among other things, by leading indicators. The [PMI](#) in manufacturing, for example, dropped slightly to 55.6 in July but remains close to a six-year high and is signalling expansion in all the countries monitored. Economic growth in the euro area will continue to be driven by household demand, which is being positively affected by the ECB's accommodative monetary policy, developments in the labour market (where unemployment fell to 9.1% in June) and positive sentiment. Exports are being boosted by the global recovery and growth in world trade. In line with recent economic developments, CF and the IMF have revised their growth outlooks upwards for both this year and the next. The euro area is thus expected to grow by about 2% this year and slow slightly next year.

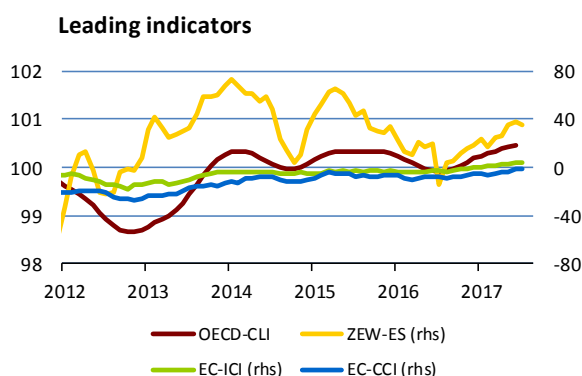
Headline inflation remained at 1.3% in July. Core inflation was also at a similar level as in previous months (1.2%). Over the outlook horizon, inflation will be affected by its core components as the positive contribution of energy prices fades out. However, these components are not trending upwards yet. According to CF, inflation will thus average 1.5% this year and drop to 1.3% next year. The ECB confirmed its monetary policy stance at its July meeting. Its net asset purchases will thus continue at a monthly pace of EUR 60 billion until at least the end of December. An extension of the purchases beyond this horizon and the volume of purchased assets will depend on the inflation outlook. In its statement, the ECB assessed the inflation pressures from the core components as still subdued. The expected path of market rates is little changed compared with the previous GEO. The 3M EURIBOR rate should thus remain negative until the end of 2018, while the 1Y EURIBOR should turn positive in mid-2018.



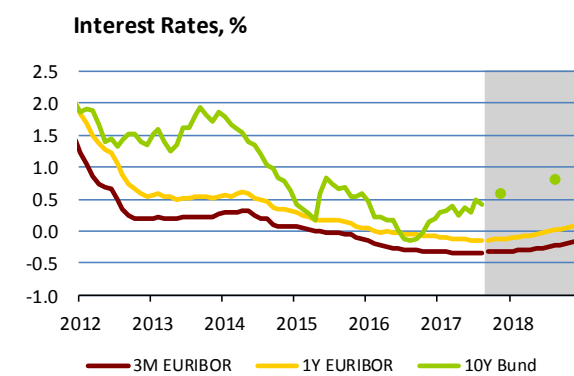
	CF	IMF	OECD	ECB
2017	2.0 ↗	1.9 ↗	1.8	1.9
2018	1.8 ↗	1.7 ↗	1.8	1.8



	CF	IMF	OECD	ECB
2017	1.5 ↗	1.7	1.7	1.5
2018	1.3 ↘	1.5	1.4	1.3



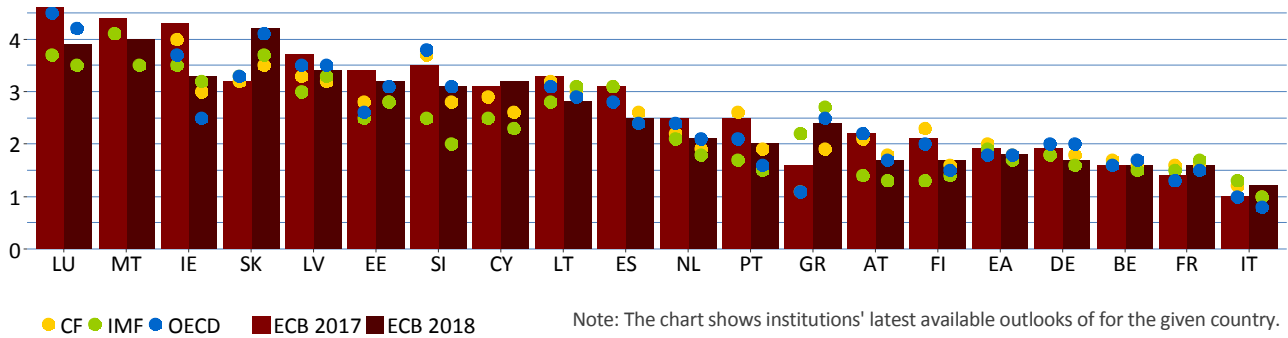
	OECD-CLI	ZEW-ES	EC-ICI	EC-CCI
5/17	100.4	35.1	2.8	-3.3
6/17	100.5	37.7	4.5	-1.3
7/17		35.6	4.5	-1.7



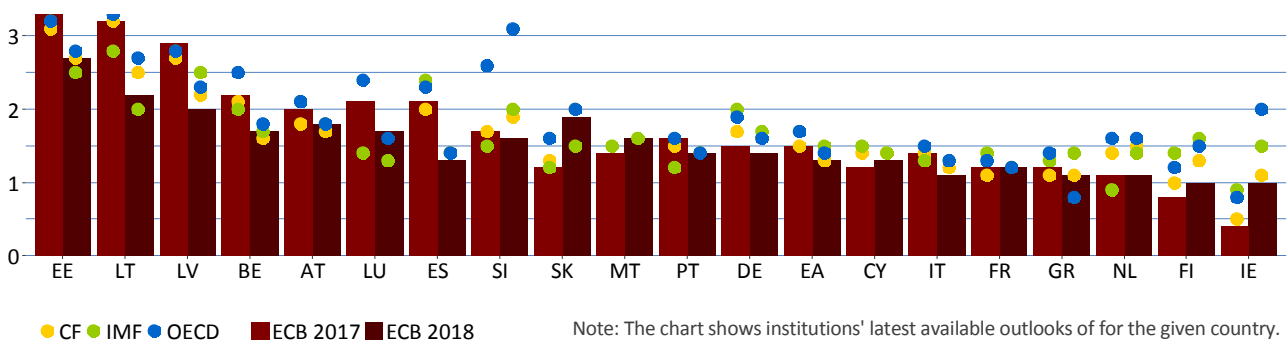
	07/17	08/17	11/17	08/18
3M EURIBOR	-0.33	-0.33	-0.31	-0.23
1Y EURIBOR	-0.15	-0.15	-0.12	0.01
10Y Bund	0.50	0.42	0.60	0.80

II. ECONOMIC OUTLOOK IN ADVANCED ECONOMIES

GDP growth outlooks in the euro area countries in 2017 and 2018, %

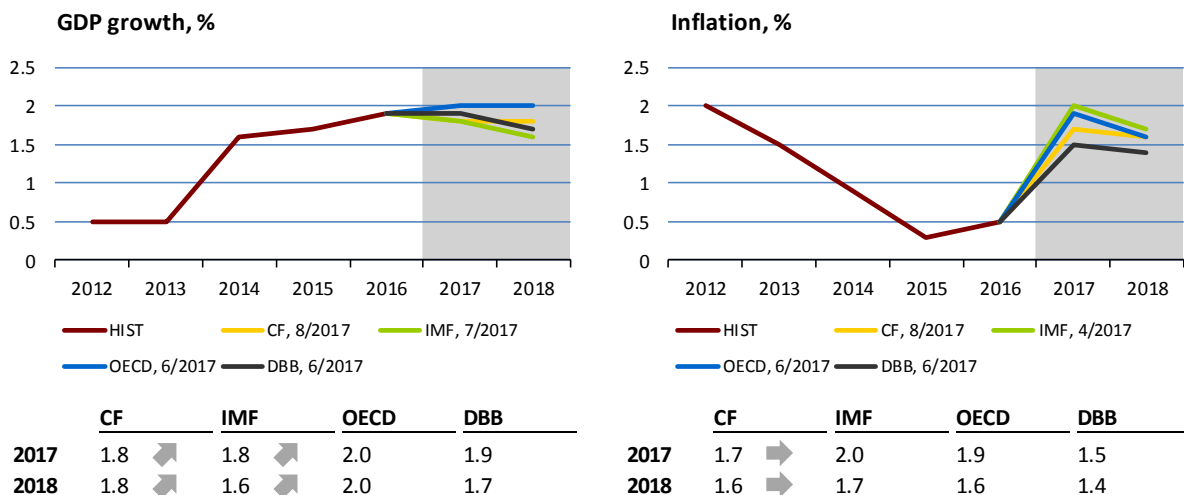


Inflation outlooks in the euro area countries in 2017 and 2018, %



II.2 Germany

Germany's economic growth outlooks were raised slightly (CF, IMF), while its inflation outlooks were left unchanged. Industrial production recorded a month-on-month decline in June, but industry performed well overall in Q2 as a whole. The leading [PMI](#) indicator in industry is well into the expansion band despite showing a slight drop in July. The leading IFO and ZEW indicators have also been rising convincingly for several consecutive months. The German economy is thus in an upward phase of the business cycle. Related to this is falling unemployment, which is being positively reflected in retail sales growth. Nevertheless, wage growth in the production sector is limited. CF expects just 2.5% this year, and the projection for 2018 is similar. Consumer price inflation therefore remains subdued. In July, it was just 1.7% (and HICP inflation just 1.5%). The current outlook for this year is at the same level. In 2018, inflation is expected to fall slightly.

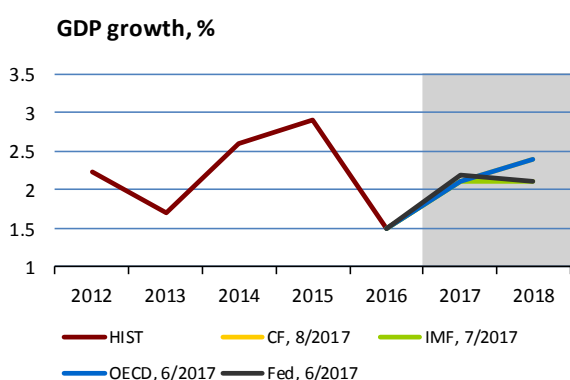


II.3 United States

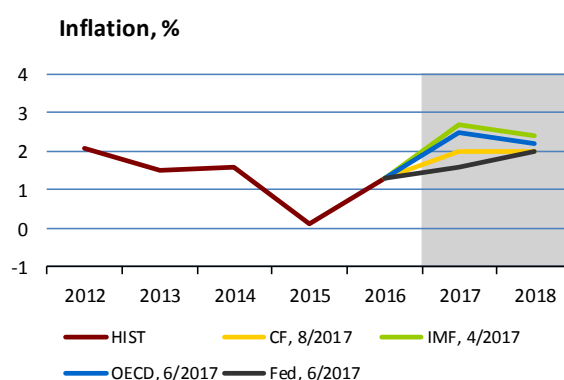
The US economy performed well in 2017 Q2, with GDP growth accelerating to 2.6% (in quarter-on-quarter seasonally adjusted annualised terms) according to the first estimate. The economic expansion was more than double that observed in Q1, due mainly to higher household consumption and corporate investment. Growth in private consumption reached 2.8%, while corporate investment grew by 8%, driven by spending on equipment (both in quarter-on-quarter annualised terms). The contribution of net exports was positive and the negative effect of inventories disappeared. The data published so far for Q3 also suggest that the economic expansion will continue. The growth outlook is being dampened mainly by moderate wage growth.

Although the US economy is in a state of almost full employment, wage pressures remain contained. Non-farm payrolls rose by 209,000 in July (as against an expected 180,000) and the data for the previous two months were revised upwards by 2,000. Unemployment fell back to 4.3% and the average hourly wage went up by 2.5% year on year. According to the Conference Board survey, consumer confidence increased again in July after having worsened slightly in June. Consumers' assessment of the current situation is the highest in 16 years. The leading ISM indicator for US manufacturing rose in most of its components in July. Companies have been registering growth in commodity prices for 17 consecutive months now.

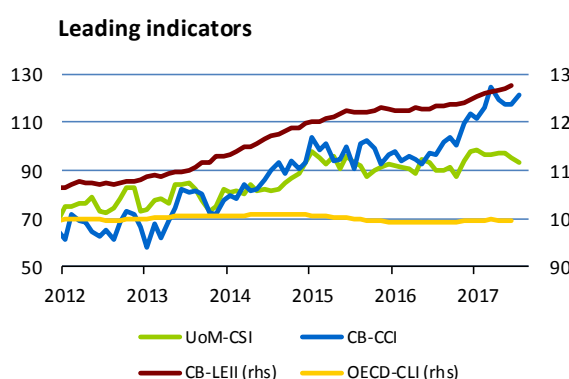
Annual headline inflation rose only slightly to 1.7% in July. This reignited the debate about the impact of temporary factors and spare capacity in the US economy on inflation. The contained inflation pressures may make the central bank postpone any further rate hike until the year-end. The CF analysts also expect no change in rates in September. However, the Fed is expected to publish further information about its balance sheet reduction at its next meeting. The August CF again lowered the inflation outlook for both years. The growth outlook was reduced for 2017 and increased for 2018. The new IMF forecast revised the growth outlooks downwards.



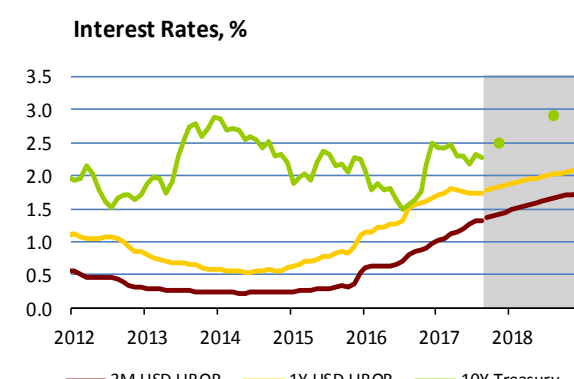
	CF	IMF	OECD	Fed
2017	2.1 ↘	2.1 ↘	2.1	2.2
2018	2.4 ↗	2.1 ↘	2.4	2.1



	CF	IMF	OECD	Fed
2017	2.0 ↘	2.7	2.5	1.6
2018	2.0 ↘	2.4	2.2	2.0



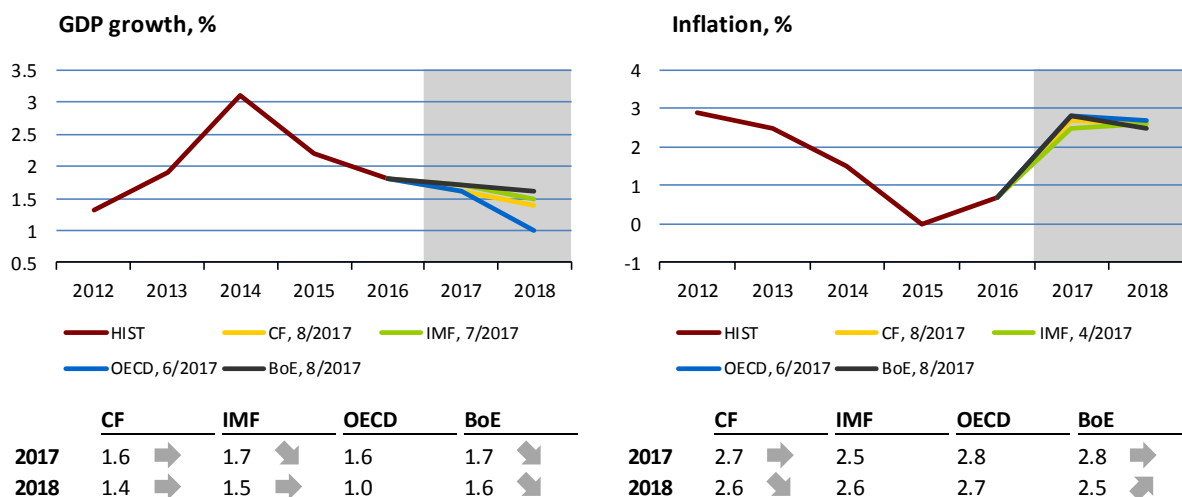
	UoM-CSI	CB-CCI	CB-LEII	OECD-CLI
5/17	97.1	117.6	127.0	99.7
6/17	95.1	117.3	127.8	99.7
7/17	93.4	121.1		



	07/17	08/17	11/17	08/18
USD LIBOR 3M	1.31	1.31	1.41	1.67
USD LIBOR 1R	1.74	1.74	1.83	2.02
Treasury 10R	2.31	2.28	2.50	2.90

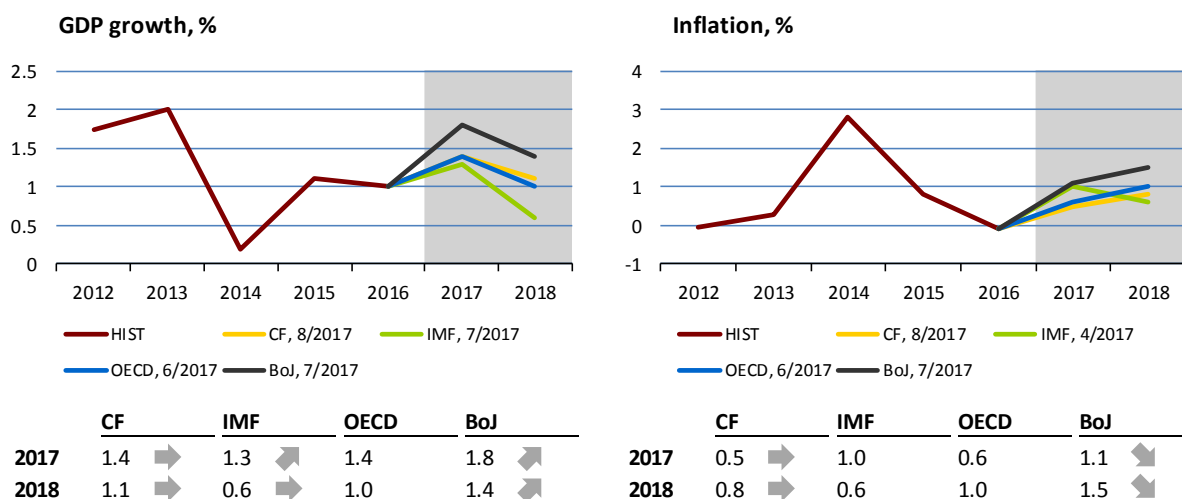
II.4 United Kingdom

Preliminary data confirm that the slowdown of the UK economy at the start of this year was not just temporary. GDP rose by just 0.3% in Q2 (compared with 0.2% in Q1). The growth was driven solely by the services sector, while manufacturing and construction recorded a slump. The stumbling economy is mainly affecting consumers, whose real wages are falling. Households are thus borrowing more and more in an effort to maintain their current living standards. This is going hand in hand with an extreme fall in savings. The ratio of savings to disposable income dropped to an unprecedented low of 1.7% in Q2 (during the financial crisis it was above 4%). No economic recovery is expected for the rest of this year either. Both the BoE and the IMF lowered their annual GDP growth outlooks for this year to 1.7% and expect a further slowdown next year. Inflation went down slightly in June (to 2.6%). The BoE thus did not raise interest rates at its August meeting. The inflation outlooks are above 2.5% for both this year and the next.



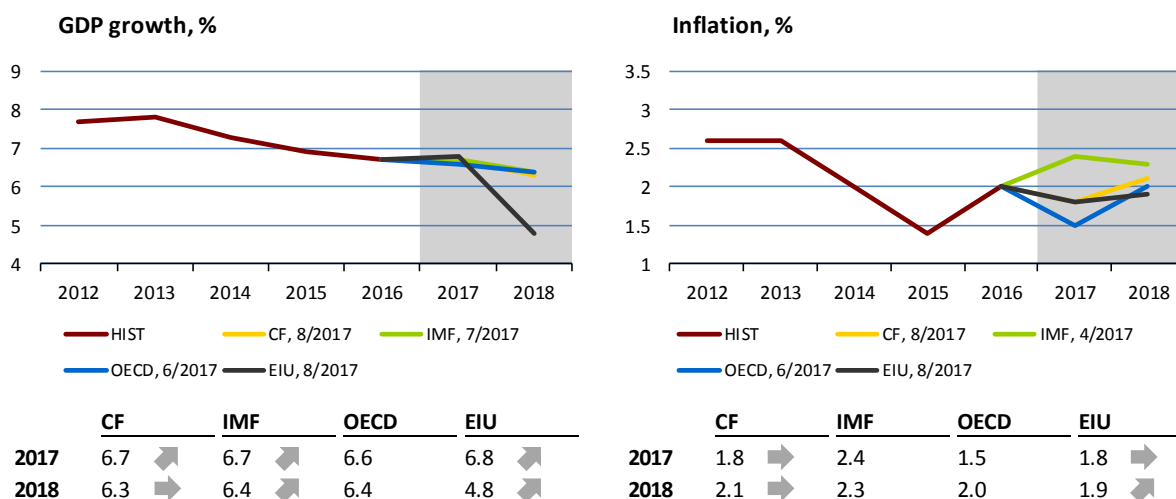
II.5 Japan

Retail sales rose by 2.1% year on year in June. The growth was driven by a drop in unemployment and a marked rise in household spending. Wage growth, however, slowed. Industrial output growth went down in year-on-year terms but rose in month-on-month terms due to an upswing in production of most goods. The [PMI](#) in manufacturing dropped slightly in July. According to purchasing managers, this was due to a further slowdown in output growth and new orders, and to stagnating exports. The BoJ raised its economic growth outlooks for both this year and the next by 0.2 pp and 0.1 pp respectively. The IMF and CF remain much more cautious in their forecasts. Inflation is at 0.4% for the third straight month now. Prices of fresh food rose in June, but were offset by a drop in transport and housing prices. At its July meeting, the BoJ thus lowered its inflation outlooks for both this year and the next and left monetary policy unchanged.



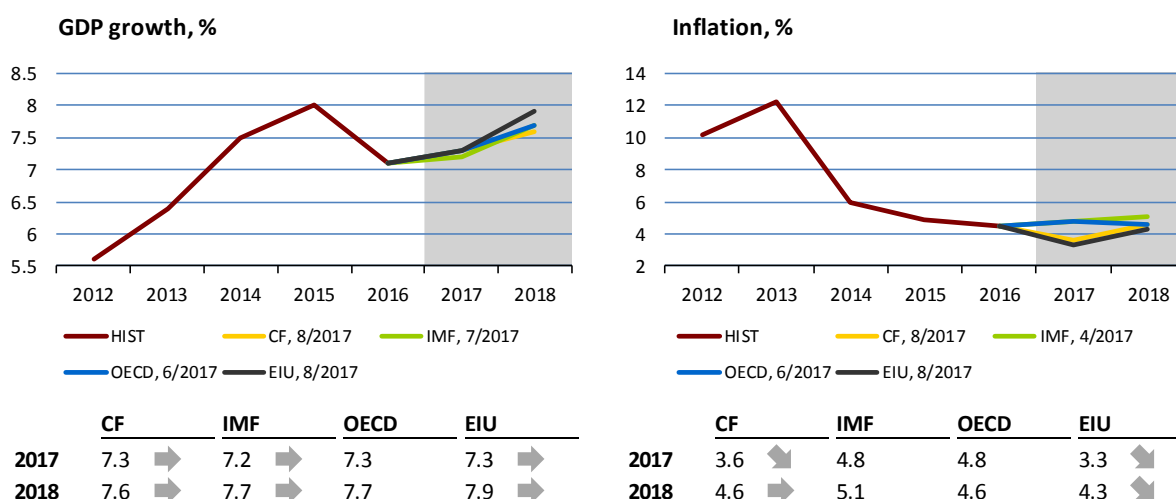
III.1 China

Chinese GDP growth stood at 6.9% in Q2, the same figure as in the previous quarter. By contrast, unemployment fell to a historical low. Industrial production growth rose in June (to 7.6%), primarily in manufacturing. Consumer confidence also went up, with year-on-year retail sales growth reaching 11% (data for June). Headline and core inflation dropped slightly compared with the previous month. A series of measures have eased the capital outflow pressures, so the central bank is considering extending the renminbi's intraday fluctuation band to $\pm 3\%$ from the current $\pm 2\%$ as evidence of continued efforts to liberalise the exchange rate regime. The August CF revised the growth outlook upwards for this year only. The GDP growth outlooks in the new IMF and EIU forecasts were similar. As for inflation, only the EIU outlook for 2018 shifted upwards.



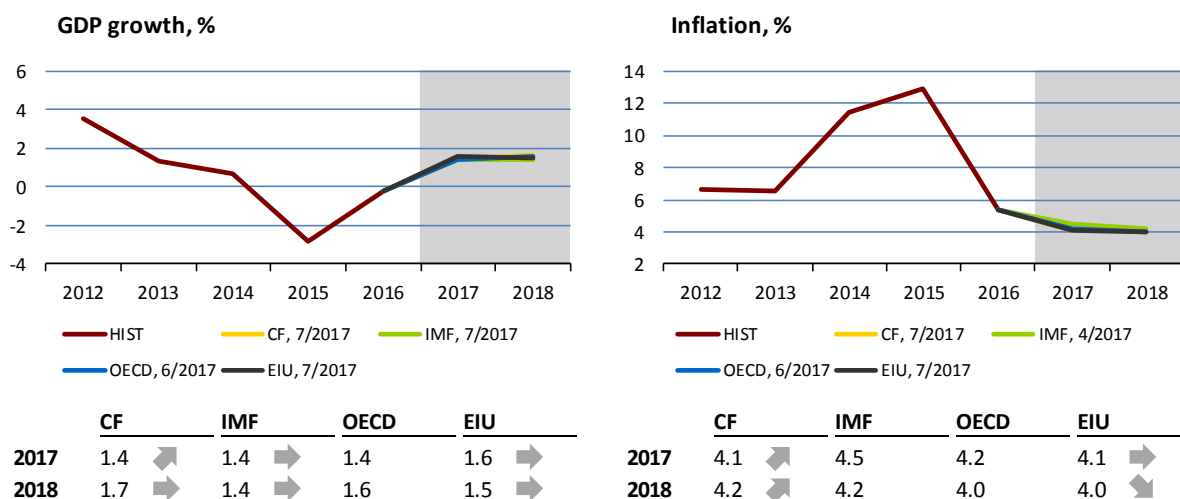
III.2 India

The GDP growth outlooks were unchanged. According to the IMF, India will remain the fastest growing large economy. However, industrial production fell year on year in June due to a decline in manufacturing output. The **PMI** in manufacturing slid into the contraction band in July to its lowest level since February 2009 (47.9 points). According to purchasing managers, production was affected by new taxes on goods and services. New orders, output and employment fell sharply as a result. The economic growth outlooks may thus be revised next month. Owing to a drop in inflation in June (to 1.5%), the inflation outlooks for this fiscal year were lowered, although only to 3.6% for now. The August CF lowered its prediction by 0.2 pp and the EIU changed its outlooks for both years monitored by 0.4 pp. The RBI responded to the sharp drop in inflation in recent months by cutting its key interest rate by 0.25 pp in August.



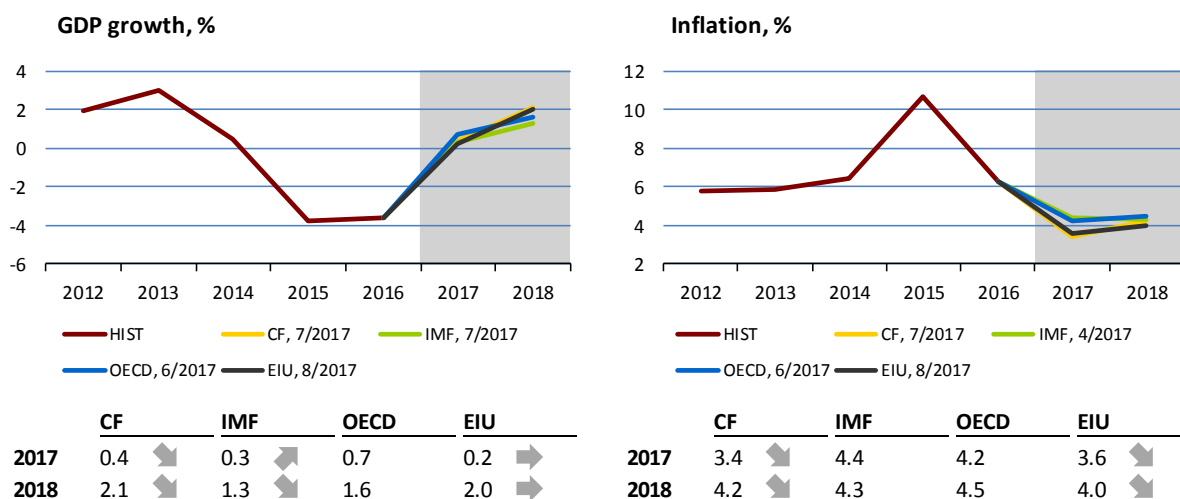
III.3 Russia

According to a preliminary estimate, GDP growth rose sharply to 2.5% in Q2 (the highest figure since 2012 Q3). Nevertheless, industrial production growth dropped markedly from 5.6% in June to 3.5% in July. Manufacturing growth slowed even more sharply (from 5.7% to 2.9%). However, the [PMI](#) suggests renewed activity in this sector. Annual inflation went down again in July, this time to 3.9%, after a previous rise to 4.4%. In month-on-month terms, prices rose by 0.1%. Growth in non-food product prices was offset by a fall in food prices (mostly fruit and vegetables). The [rouble](#) was slightly weaker in July and the first half of August than in June, fluctuating around RUB 58.5–61 to the dollar. At the one-year horizon, it is expected to remain close to RUB 60 to the dollar. The new CF, EIU and IMF outlooks expect economic growth of 1.4%–1.6% this year and the next. Consumer prices will go up by around 4%.



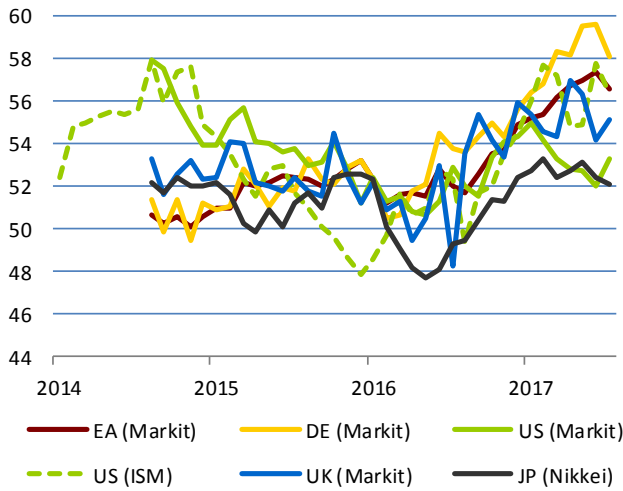
III.4 Brazil

Annual industrial production growth in Brazil slowed from 4.2% to 0.5% in June. The July [PMI](#) in manufacturing also fell, reaching the 50 point level; the composite PMI remains in the contraction band. By contrast, unemployment went down for the third consecutive month. It fell from a record 13.7% in March to 13% in June. Employment rose mainly in industry, public administration, defence and social services. Inflation fell by a further 0.3 pp to 2.7% in July. The Brazilian central bank unanimously lowered its key Selic rate by 100 bp to 9.25% at the end of July. This, the seventh consecutive cut, was in line with expectations. The new CF, EIU and IMF outlooks estimate GDP growth of around 0.2%–0.4% for this year. Next year, growth is expected to accelerate to 1.3%–2.1%. Inflation will rise slightly (from around 3.5% this year to around 4% next year) according to CF and the EIU.

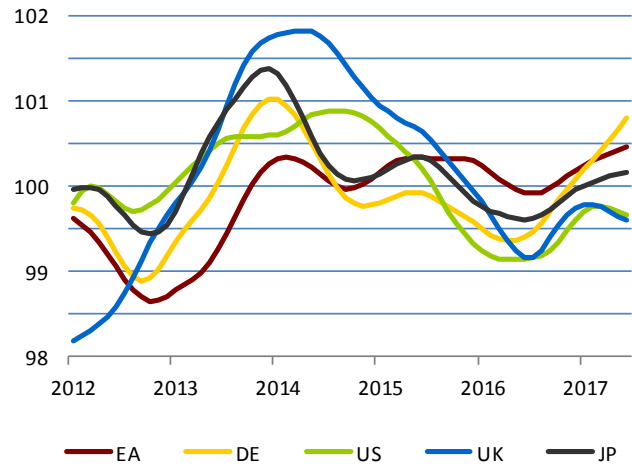


IV.1 Advanced economies

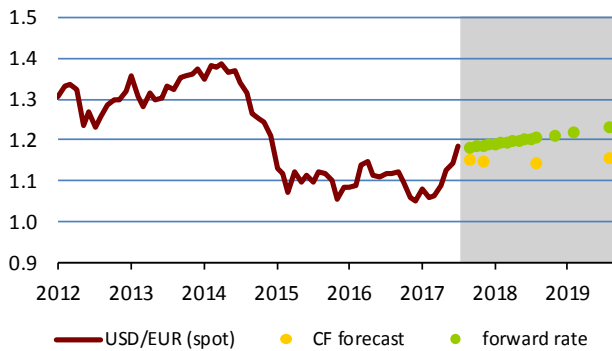
PMI in manufacturing



OECD Composite Leading Indicator

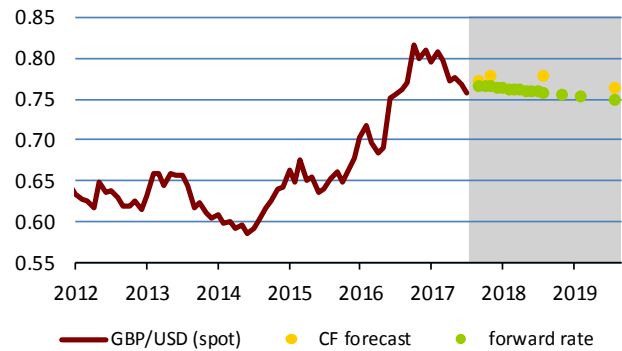


The US dollar (USD/EUR)



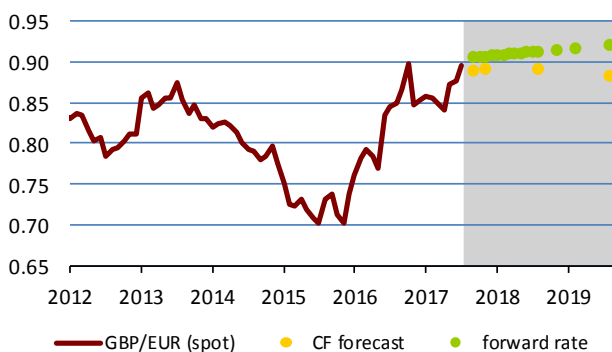
	7/8/17	09/17	11/17	08/18	08/19
spot rate	1.180				
CF forecast		1.151	1.147	1.145	1.157
forward rate		1.181	1.185	1.204	1.231

The British pound (GBP/USD)



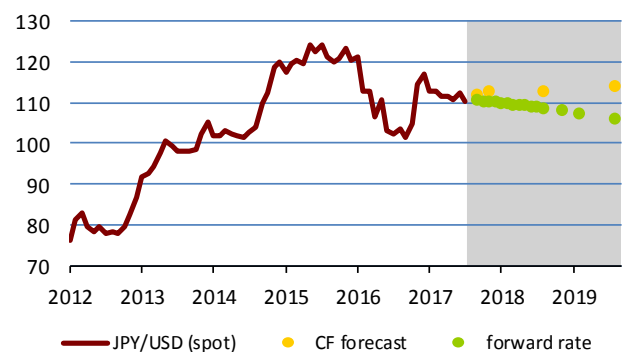
	7/8/17	09/17	11/17	08/18	08/19
spot rate	0.768				
CF forecast		0.772	0.778	0.778	0.763
forward rate		0.766	0.765	0.758	0.748

The British pound (GBP/EUR)



	7/8/17	09/17	11/17	08/18	08/19
spot rate	0.906				
CF forecast		0.888	0.892	0.890	0.883
forward rate		0.905	0.907	0.913	0.921

The Japanese yen (JPY/USD)

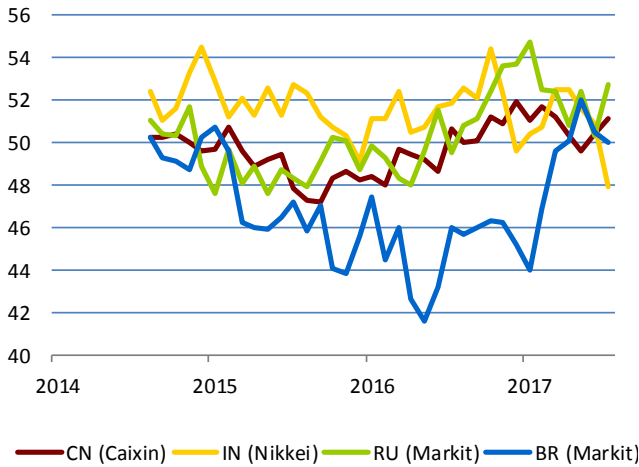


	7/8/17	09/17	11/17	08/18	08/19
spot rate	110.8				
CF forecast		111.8	112.6	112.9	114.1
forward rate		110.6	110.3	108.6	106.2

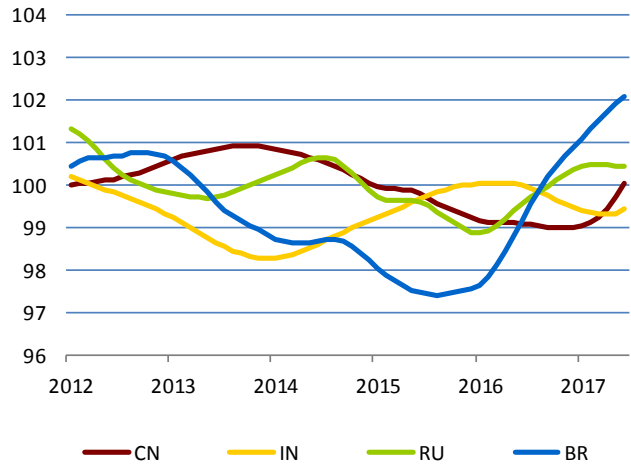
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.2 BRIC countries

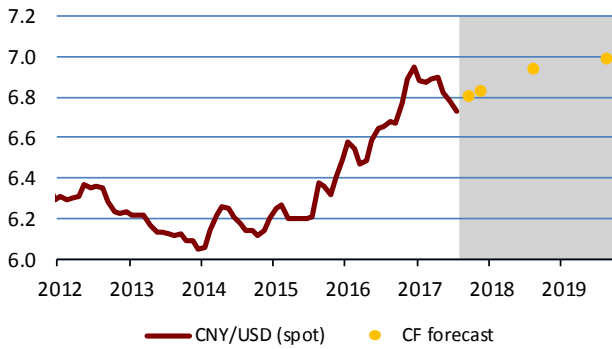
PMI in manufacturing



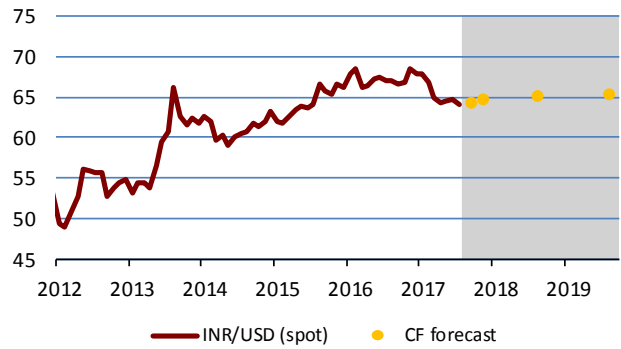
OECD Composite Leading Indicator



The Chinese renminbi (CNY/USD)



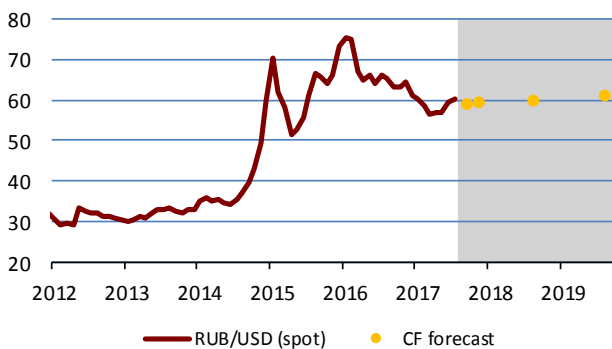
The Indian rupee (INR/USD)



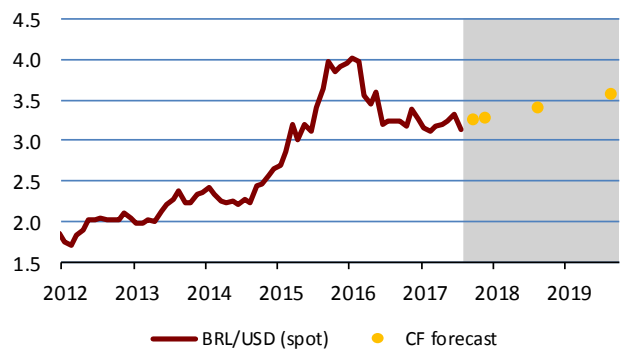
	7/8/17	09/17	11/17	08/18	08/19
spot rate	6.718				
CF forecast		6.802	6.833	6.936	6.985

	7/8/17	09/17	11/17	08/18	08/19
spot rate	63.82				
CF forecast		64.37	64.67	65.16	65.40

The Russian rouble (RUB/USD)



The Brazilian real (BRL/USD)



	7/8/17	09/17	11/17	08/18	08/19
spot rate	60.08				
CF forecast		58.93	59.53	59.95	61.04

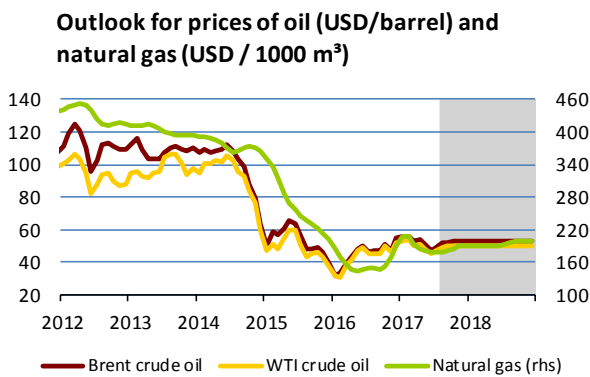
	7/8/17	09/17	11/17	08/18	08/19
spot rate	3.127				
CF forecast		3.256	3.284	3.409	3.579

Note: Exchange rates as of last day of month.

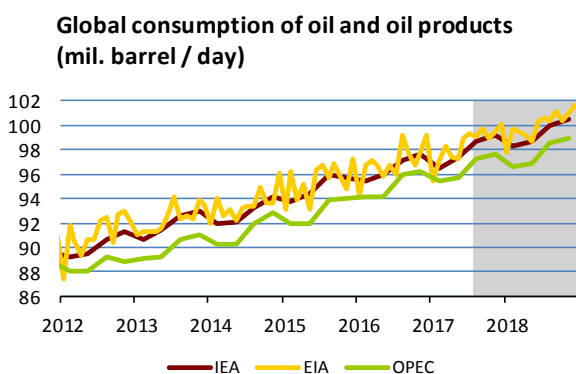
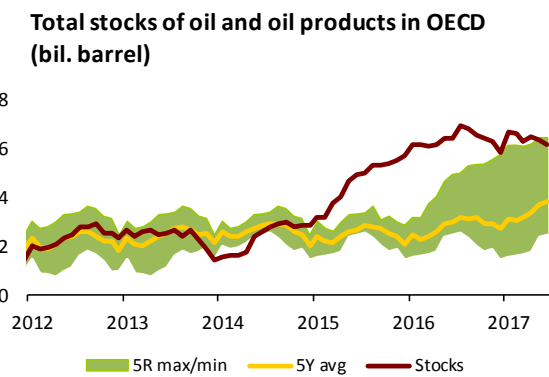
V.1 Oil and natural gas

The Brent crude oil price fell below USD 45/bbl to a seven-month low in the second half of June. However, it then returned to an upward trend on reports of falling drilling activity (and a temporary drop in oil output) in the USA. News of rising OPEC output caused a modest reversal in early July, but oil prices then rose until the end of the month. Improved oil market sentiment was supported by a drop in global oil stocks, strong demand from end-users and refineries due to favourable margins, an improved situation of the Chinese economy and a weakening dollar. Price growth was also fostered by massive coverage of speculative funds' short positions (without significant growth in long positions). At a meeting in St Petersburg on 24 July, representatives of OPEC and other large producers agreed that Nigeria should join the deal to cap output after it reaches 1.8 million barrels a day (extraction is currently running at about 1.7 million bbl/day). By contrast, Libya may continue to raise output. OPEC representatives also changed their rhetoric at the meeting and started to emphasise export reductions instead of lowered output. Exports were strong in the first half of the year, as some countries made up for the limited output by reducing their stocks. The Brent crude oil rose above USD 50/bbl after this key meeting and stayed at that level in the first half of August.

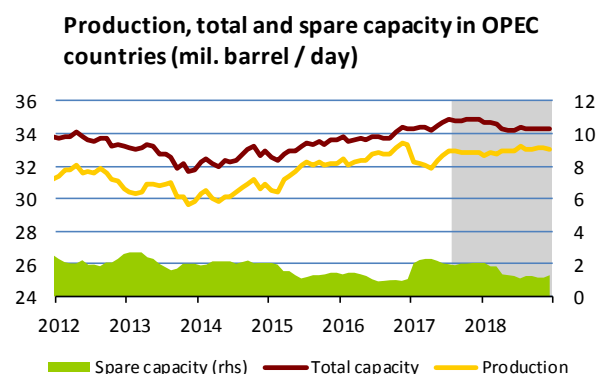
The market futures curve as of the August CF survey date had thus shifted higher and implied an average price of USD 52.4/bbl for this year and USD 53.2/bbl for 2018. This is in line with the expectations of the CF analysts, who give an oil price of USD 52.9/bbl at the one-year horizon in their August survey. The EIA forecast is about USD 1/bbl lower for both years.



	Brent	WTI	Natural gas
2017	52.42 ↗	49.68 ↗	188.13 ↗
2018	53.21 ↗	50.24 ↗	193.59 ↗



	IEA	EIA	OPEC
2017	97.95 ↗	98.41 ↗	96.50 ↗
2018	99.36 ↗	100.02 ↗	97.75 ↗



	Production	Total capacity	Spare capacity
2017	32.53 ↗	34.62 ↗	2.09 ↗
2018	32.96 ↗	34.37 ↗	1.40 ↗

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

Note: Oil price at ICE, price of Russian natural gas at German border – IMF 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.

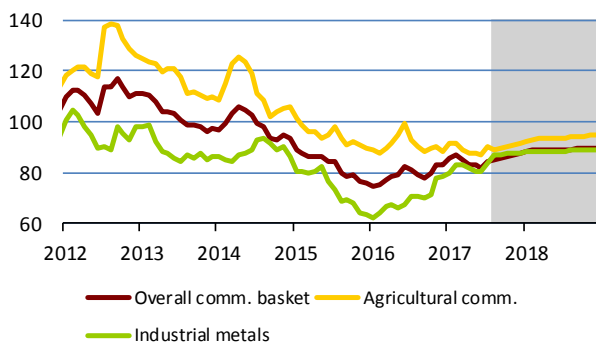
V.2 Other commodities

The aggregate non-energy commodity price index increased in July and kept climbing in the first half of August. The industrial metals sub-index showed the same pattern. The food commodity sub-index also rose in July, but erased part of this growth in the first half of August. The outlook up to the end of 2018 is slightly rising for the food commodity index and more or less flat for the metals index.

Grain prices went up in the first half of July due to adverse weather (drought on the US plains and floods in South-East Asia). In the second half of July, however, the weather in the USA improved and concerns about high stocks after the 2017/18 harvest prevailed again. The USDA raised its forecast for global soy, rice and corn stocks after this year's harvest and only slightly lowered its outlook for wheat stocks. Only rice prices thus continued rising. Sugar prices increased in response to the strengthening Brazilian currency and a cut in the local ethanol tax. Both these factors should redirect a larger part of the sugar cane harvest to ethanol production.

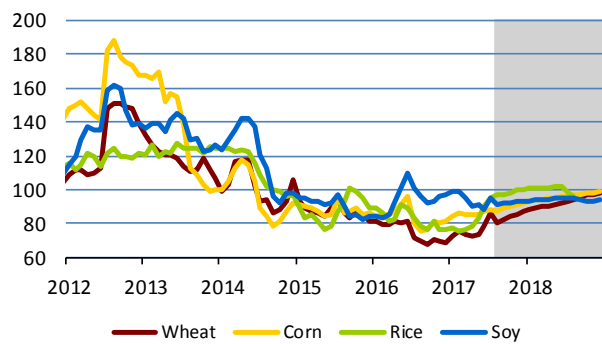
Basic metals prices grew across the index in response to strong growth in construction and manufacturing in China in Q2. Industry continued to grow in July and the Chinese PMI edged up from 50.4 to 51.4. The growth in copper prices to a two-year high was also due to a 5.7% year-on-year drop in output in Chile due to heavy rains and strikes in the previous month. Aluminium prices grew more slowly, dampened by a 5.7% year-on-year increase in global output (9.1% in China) in June. Iron ore (and nickel) prices surged in response to strong demand from steel producers. They raised production by 3.2% year on year in June (5.7% in China). Thermal coal prices rose for the second consecutive month due to higher demand for energy in China caused by a heat wave in July and lower coal production in Indonesia.

Non-energy commodities price indices



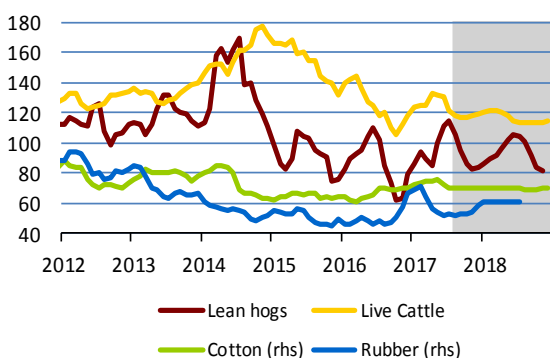
	Overall	Agricultural	Industrial
2017	85.3	89.7	84.2
2018	89.2	93.8	88.6

Food commodities



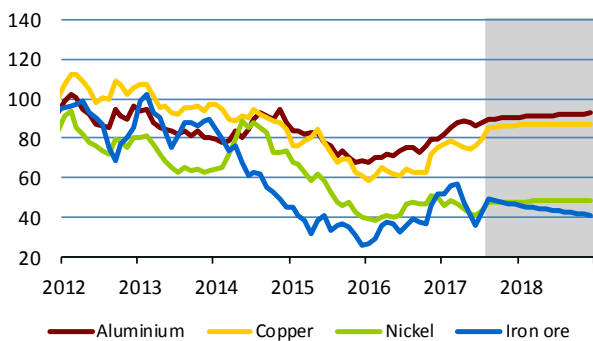
	Wheat	Corn	Rice	Soy
2017	79.4	87.8	89.1	93.3
2018	93.0	96.0	100.4	94.3

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2017	94.5	123.4	78.2	56.5
2018	93.9	116.7	74.9	62.1

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2017	87.9	80.6	45.8	47.6
2018	91.6	87.1	48.3	43.4

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.

Brexit a year after the referendum: What lies ahead? Predictions of the economic impacts¹

Last July went down in history due to the British referendum on EU membership, in which a slim majority of voters (less than 52%) decided that the UK should leave the EU. In accordance with Article 50 of the Lisbon Treaty, the British government officially informed the President of the European Council in March this year of the UK's intention to leave the EU. The question is what impact this decision will have on the UK economy. A whole range of studies attempting to answer this question as best as possible were published before the referendum. This article summarises the most important of them. They generally concurred that the British economy would be damaged by leaving the EU, a prediction that seems to be materialising so far.² The future impacts of Brexit will depend on the conditions negotiated between the UK and the EU. This article briefly presents the main possible scenarios and offers a wide range of estimates of how much the UK would pay for the different options and their specifications in terms of loss of GDP.

1 Forecasting exercises, or the future costs of Brexit

A whole range of academic and popular publications³ have attempted – with varying degrees of success – to quantify the economic impacts⁴ of Brexit. However, the costs of Brexit (not only the financial settlement, but above all the future loss of economic growth) will depend largely on the subsequent trade arrangements and political relationships between the UK and the EU. It remains rather unclear what sort of relationship the “ex-spouses” might eventually agree upon. The Brexit literature generally mentions five main options, ranging from continued very close cooperation and UK membership of the EU internal market to the extreme of no deal and the UK being just another third-party country for the EU, with no advantages or obligations (see Box 1 for details). In reality, however, there is nothing to prevent creativity, so the final exit deal may offer a completely unexpected solution.

The following sections summarise the findings of several studies published by renowned institutions which have attracted the most attention from experts. They present thoughts on the possible future trade arrangements and related forecasts of the impacts of selected scenarios on the British economy. The selected publications include analyses conducted by both proponents and opponents of continued UK membership of the EU.

1.1 PricewaterhouseCoopers (PwC)⁵

One of the first comprehensive forecasts of the possible economic impacts of Brexit was issued by the PwC consultancy in March 2016. Its forecasts of future economic developments in the UK are created using a computable general equilibrium (CGE) model taking into account only the economic impacts of Brexit. The study identifies five main potential ways in which Brexit could affect the British economy:

- In the short term, these include above all a significant increase in economic and political uncertainty around the UK's future relationship with the EU. This uncertainty will last for at least two years after the referendum. It will manifest itself in increased financial market and exchange rate volatility, higher risk premia in credit and equity markets, and lower business confidence and investment. However, some of this could be offset by some positive sentiment around whether the UK would become more prosperous outside of the EU. This, though, is not very likely. Uncertainty will thus have a clear negative impact on economic growth.
- At present, UK firms export goods tariff-free to the EU. After Brexit, however, tariffs and non-tariff barriers⁶ to trade will increase (the extent of the increase will depend on the scenario selected).

¹ Author: Pavla Břízová. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank. This is the second article on the economic impacts of Brexit. The first one, which discussed the impacts on the UK economy so far, was published in the July issue of Global Economic Outlook (Břízová, 2017).

² Although the UK remains a full member of the EU until the exit agreement is signed, Brexit has been affecting many economic indicators for over a year now. The British pound has weakened substantially, pushing inflation up towards 3% via higher import prices. This is harming British households above all. In an effort to maintain their current living standards, they are saving less and borrowing more. Even so, they have had to start buying less. The adverse effect of Brexit is thus gradually spreading through the British economy. As a result, it slowed considerably at the start of this year, and according to preliminary estimates the second quarter saw no marked improvement. For details, see Břízová (2017).

³ Summary of some of them has been published already in the article of Central Bank Monitoring in June 2016, focused on the impacts of Brexit from the viewpoint of the Bank of England.

⁴ EU membership is a very complex issue and its advantages can be evaluated from many perspectives. However, this article deals solely with the economic costs and benefits of membership and leaves aside, for example, the political, social and cultural viewpoints.

⁵ PwC (2016)

⁶ Non-tariff barriers to trade include a wide range of measures that raise the costs of trade such as border controls, rules of origin checks and cross-country differences in regulations over things like product standards and safety.

Box 1: Five main scenarios for post-Brexit trade arrangements

1) EEA: The softest Brexit option would be the Norwegian scenario. It is based on the idea of Britain remaining a member of the **European Economic Area** (EEA) after leaving the EU. The EEA came into existence in 1994 upon the signing of a treaty allowing countries from the European Free Trade Association⁷ to participate in the EU internal market. (Besides the EU Member States, the EEA members now include Norway, Iceland and Liechtenstein.) The EEA is based mainly on free movement of goods, services, persons and capital. The non-EU members have little influence in the rules to which they are subject due to EEA membership. In addition, they contribute to the EU budget to be allowed access to the internal market. (However, they pay less than the EU Member States. Centre for European Reform, a London-based think-tank, estimates that the current UK's contribution would decrease only by about 10%.⁸) In this scenario, the UK would also automatically be out of the EU customs union.

2) EFTA: The Swiss, or bilateral, scenario is an example of more differentiated cooperation. After leaving the EU, the UK would re-join the **European Free Trade Association** (EFTA) but would not join the EEA. It would then strike bilateral trade deals with the EU. However, the conditions and scope of these deals cannot be estimated in advance. The current arrangement between Switzerland and the EU could be a highly misleading model to use. It took Switzerland ten years to negotiate this deal, and it did so at a different time and from a different position – as a respected “neutral player”, not an “EU renegade”. Even in the EFTA scenario, the UK would still have to contribute to the EU budget (albeit much less). Moreover, UK banks would lose the ability to offer their services

in the EEA without being subject to non-domestic regulations. This scenario is also outside the EU customs union.

3) CU: If Britain negotiates only to stay in the **customs union** (CU), it could continue to trade with the EU without tariffs. It would then apply the same tariffs as the EU vis-à-vis third-party countries. (For example, Turkey is currently a member of the EU customs union.) However, its access to the internal market would be greatly reduced. This would be especially unpleasant in the case of services trade, as financial services are an important UK export item. Britain's ability to influence the rules it will have to follow decreases with each successive scenario.

4) FTA: In general, the lowest degree of trade integration is a **free trade area** (FTA), in which two or more countries agree either to impose lower tariffs on mutual trade in some goods than they impose on other countries, or to abolish tariffs on mutual trade completely.

5) WTO: If the UK and the EU fail to agree a preferential arrangement, trade between them will be governed by the rules of the **World Trade Organisation** (WTO) once the time period stipulated in Article 50 of the Lisbon Treaty ends. In accordance with the MFN (most favoured nation) principle, therefore, the tariffs currently used by the EU against third-party countries would be imposed on goods heading from the UK to the internal market. This principle states that a WTO member country is not allowed to give any of its trading partners preferential treatment. It has to offer the same conditions to every WTO member country as it does to its most preferred partner. As a result, its trading partners all have a level playing field. Britain would thus forfeit all the advantages it currently enjoys in its trade with the EU.

Restricted access to the EU market could also lower the returns to investment in the UK, which would depress investment activity (in particular foreign direct investment).

- The third mechanism that Brexit could trigger – via a reduction in migration in search of work – is a decline in labour supply. This would particularly impact sectors which are heavily dependent on low-skilled labour, such as agriculture, food and accommodation services.
- On the other hand, Brexit could create some scope for deregulation and a potential reduction in costs. However, the potential savings are limited. Regulation is usually intended to address market failures, so it cannot be condemned across the board. In addition, the amount of EU regulation that the UK is currently bound by and is unnecessary from its perspective is not very significant.
- The second positive impact of Brexit is clearly the elimination of contributions to the EU budget.

The calculations in the study are based on two model scenarios. The first option examined is based on the assumption that after Brexit the UK will negotiate a deal with the EU on free movement of goods but not services (this is based on the premise that the UK will reject free movement of persons and the EU will therefore be unwilling to let it benefit from free movement of services). The UK will thus be obliged to comply with EU standards only in the case of goods exports to the EU and will be able to control migration as it wishes. The scenario thus assumes that the inflow of low-skilled workers into Britain⁹ will stop. As PwC

⁷ European Free Trade Association was established in 1960 by the UK, Denmark, Sweden, Norway, Switzerland, Austria, Portugal and Finland as a parallel to the European Economic Community (today's EU). It allowed free trade among member countries without a necessity to set up common institutions.

⁸ Centre for European Reform (2014)

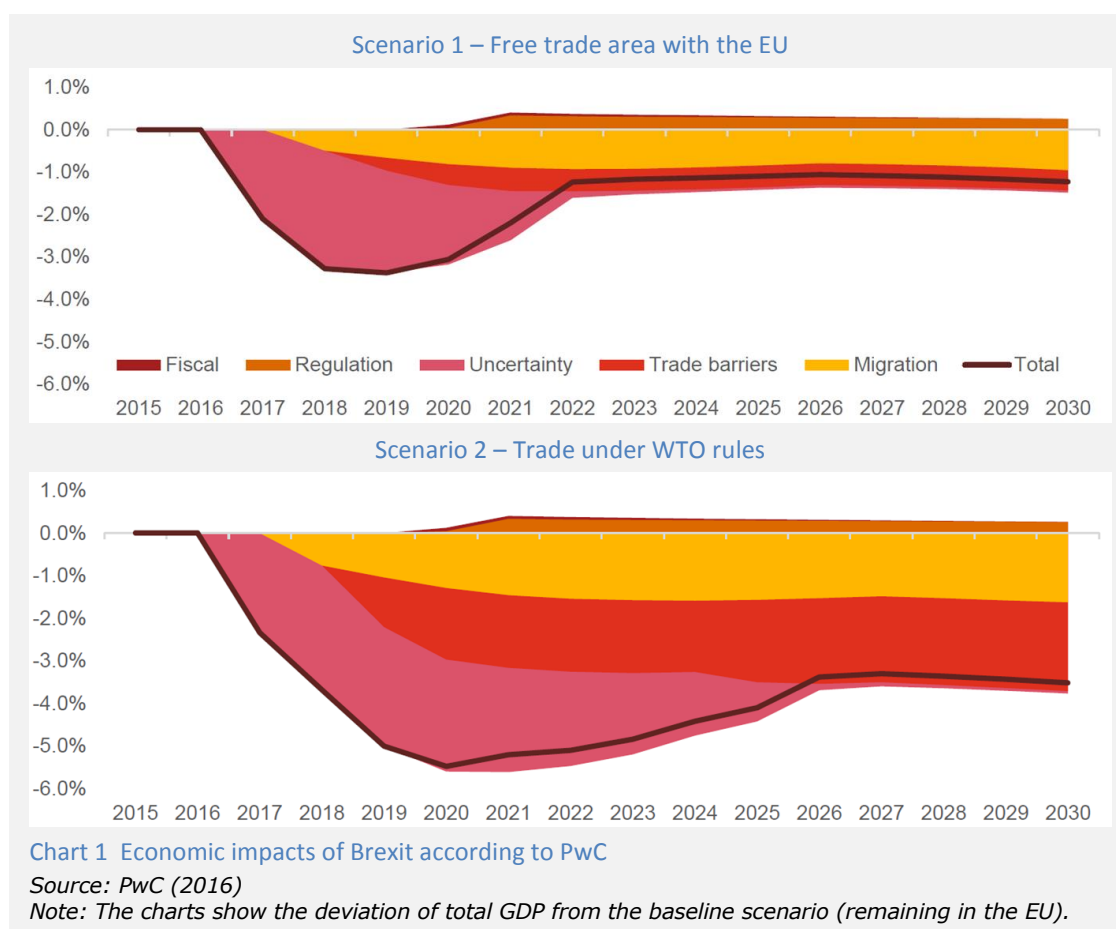
⁹ This article discusses the state officially called the United Kingdom of Great Britain and Northern Ireland (the United Kingdom for short). However, it deviates from this terminology in some passages, replacing it with other commonly used (albeit inaccurate) terms such as Britain for reasons of linguistic variety.

characterises this scenario as optimistic, it additionally assumes that the British government will be able to attract a greater number of high-skilled workers to the UK. As for trade arrangements with countries outside the EU, the scenario assumes that all existing free trade agreements with third-party countries which the UK co-signed as an EU Member State will remain in force. Another optimistic feature of this option is that the UK will be able to negotiate a free trade agreement with the USA relatively quickly (by 2021). A clear consequence of this scenario is that the UK will not contribute to the EU budget. Greater powers to deregulate will enable the UK to achieve some cost savings, but the inevitable regulatory divergence will increase non-tariff barriers to trade with the EU.

The second scenario is based on the idea of a hard Brexit, in which the UK and the EU strike no deal. Trade between them will therefore be subject to tariffs based on WTO rules. This scenario also assumes that the British government is less successful in achieving its objectives. It thus fails to attract more high-skilled workers (compared to the baseline scenario of Britain remaining in the EU) and the trade talks take longer. Agreements with the countries which now have an FTA with the EU will have to be renegotiated (which will take until 2026). Until then, Britain will have to trade with all its trading partners under WTO rules. The UK will not have a free trade area with the USA until 2026.

The baseline scenario of the analysis, with which the impacts of the first and second scenarios are compared, assumes that the UK stays in the EU. This scenario is assumed to be largely a continuation of the current trends in the British economy (annual GDP growth of around 2.3% until the end of the forecast period, i.e. 2030). It also takes into account the new EU deal for the UK.¹⁰ It therefore assumes that competitiveness reforms will bring about a small and gradual reduction in non-tariff barriers to trade and a small reduction in regulatory costs.

According to PwC, both Brexit scenarios would result in a marked slowdown of the UK economy (which in both cases, however, would continue to record positive GDP growth, only lower than if it remained in the EU). In the forecasts, the impacts of the Brexit decision begin to propagate straight after the referendum, mainly due to uncertainty, and peak around 2020 (see Chart 1). The simulation of the first scenario shows that total GDP in the UK in 2020 would be 3% lower than if Britain stayed in the EU. At 2015 prices, this



¹⁰ In February 2016, the European Council adopted an agreement taking on board Britain's demands to amend certain aspects of the current functioning of the EU. It addressed four areas: economic governance, competitiveness, sovereignty and social benefits and free movement of persons. However, it never took effect, as it was conditional on the UK deciding to remain in the EU (European Council, 2016).

means a loss of GBP 55 billion (roughly EUR 62 billion). Complete failure to strike deals and the materialisation of the second scenario would result in a loss of GDP of 5.5% (GBP 100 billion). The uncertainty then fades gradually and some slight positive effects even emerge (deregulation and fiscal savings). However, a large proportion of the impacts are permanent, leading to a sustained lower GDP level compared to the baseline scenario. Assuming the materialisation of the more favourable scenario between 2022 and the end of the forecast period, total UK GDP would be 1.2% lower than if the UK remained in the (slightly reformed) EU. The more pessimistic scenario implies a reduction of the impacts to a lasting deviation of 3.5%, with stabilisation occurring four years later than in the first scenario.

1.2 Centre for Economic Performance (CEP)¹¹

In March 2016, the Centre for Economic Performance (CEP) at the London School of Economics and Political Science (LSE) issued a rather narrower study analysing the consequences of Brexit for UK trade and living standards. It uses two approaches. It first examines the “static” effects of trade, which are based on David Ricardo’s classic work on comparative advantages.¹² Removing trade barriers in the EU internal market supports trade, which generally leads to lower prices and greater product diversity, which benefit consumers. UK businesses and their employees benefit from new export opportunities that lead to higher sales and profits.

The analysis uses a quantitative trade model of the global economy and applies it to data from the World Input-Output Database.¹³ Like the PwC study, it takes into account two scenarios: an optimistic one based on the ambitious assumption that the UK would remain an EEA member after leaving the EU (see Box 1) and a pessimistic one assuming the end of any close cooperation and hence trade based solely on WTO rules. Both scenarios involve a rise in trade costs, which can be divided into three parts:

- higher tariffs on imports (relevant only to the WTO scenario, where the MFN principle is applied),
- higher non-tariff barriers to trade (approximated in the EEA scenario by one-quarter, and in the WTO scenario by three-quarters, of the current reducible non-tariff barriers between the EU and the USA).
- the cost of non-participation in future steps that the EU takes towards deeper integration and the reduction of non-tariff barriers (according to estimates, these barriers are being reduced within the EU approximately 40% faster than in other OECD countries; the optimistic scenario assumes the difference to fall to 20% after Britain leaves the EU, while the pessimistic assumes continuation of the current trend).

The estimates also assume that UK fiscal transfers to the EU budget would fall or stop completely after Britain leaves the EU. According to HM Treasury,¹⁴ the net contribution is around 0.5% of GDP. In the first, “Norwegian” scenario, the CEP assumes that it falls by 17%. Even in the WTO scenario, however, the British government would not save the full 0.5% of GDP, but only 0.3%, as it would have to compensate universities, firms and other non-government bodies for the funds they now receive directly from the EU (and are therefore excluded from the statistics on the net contributions of the individual Member States).

The CEP quantifies the impacts of Brexit as the percentage change in the level of income per capita that has the same effect on living standards in the UK as Brexit. The reported numbers should be interpreted as permanent changes in average income per capita that occur immediately following Brexit (and last until the end of prediction period). The impact on income is -1.3% in the optimistic scenario and -2.6% in the pessimistic one. According to the CEP, the costs of reduced trade far outweigh the fiscal savings. The analysis also examines the impacts on other countries. The results reveal that Brexit will cost the other EU Member States between 0.1% and 0.3% of their GDP.¹⁵

Some proponents of leaving the EU argued that the UK could benefit from Brexit by unilaterally removing all tariffs on imports into the UK in order to lower the cost of imported goods (Britain is a net goods importer). The CEP therefore re-ran its analysis of the static trade effects after including the additional assumption of the removal of all import tariffs. This reduced the negative impacts of Brexit, but they still entailed a permanent decrease in average income per capita of 1% in the Norwegian scenario and 2.3% in the WTO scenario.

The second methodological approach used in the CEP analysis to estimate the long-term impacts of Brexit additionally takes into account the secondary effects of a decline in trade (such as lower investment and migration), which cause productivity to fall. This alternative, reduced-form approach accounting for the dynamic effects of trade leads, of course, to much higher estimates of the negative impacts of Brexit. According to these estimates, UK income per capita would drop by between 6.3% and 9.5% in the

¹¹ Dhingra et al. (2016a)

¹² Ricardo (1817)

¹³ World Input-Output Database, <http://www.wiod.org/>

¹⁴ HM Treasury (2013)

¹⁵ Ireland suffers the biggest losses (only slightly smaller than the UK itself), alongside the Netherlands and Belgium (roughly one-third of the UK costs). By contrast, Turkey, Taiwan, Russia, Australia, Canada, South Korea and China gain slightly from Brexit according to the CEP (an increase in living standards of less than 0.1%).

optimistic case of Britain remaining a member of the EEA. The results show how important the secondary benefits of trade are. According to additional model simulations by the CEP, the UK would not even benefit much from the often-cited closer trade links (for example with the USA or Japan) it intends to develop after Brexit. The CEP is also sceptical of the possibility of making savings by removing excess regulation. According to the OECD, Britain already has one of the least regulated product markets in the world. The same applies to its labour market.

1.3 Organisation for Economic Cooperation and Development (OECD)¹⁶

The OECD also published its own study on this issue in April 2016. It likened the economic consequences of Brexit to a tax on UK GDP, imposing a persistent and rising cost on the economy. To prepare its forecast of the economic impacts it chose the NiGEM¹⁷ macro model for the world economy developed by the London-based National Institute of Economic and Social Research (NIESR). However, when calibrating the shocks describing the impacts of Brexit on the individual segments of the UK economy, it was not content with expert judgement and instead used a two-stage approach. It first estimated the impact that leaving the EU will have on UK foreign trade using its global CGE trade model METRO. It then used the numbers obtained to calibrate a simulation in NiGEM.

Unlike most other institutions, the OECD assumed that the Brexit negotiations would end in late 2018 in a de facto hard Brexit (trade under WTO rules). Only then, over 2019–2023, would the terms of future UK trade with the EU (an FTA signed in 2023) and with the 53 countries with which the UK is currently trading on the basis of preferential agreements signed by the EU, be negotiated.

In the near term, Brexit would affect the economy mainly through heightened uncertainty. The OECD modelled this as a shock to the financial markets. It assumed the magnitude of this shock to be similar to that observed during the acute phase of the euro area crisis in 2011–2012 and applied it to both the UK economy and the euro area. It also implicitly assumed a 10% depreciation of sterling against the US dollar in mid-2016. This depreciation was assumed to gradually fade over the simulation period. According to the METRO model, Britain's real exports would drop by 8% if the country were to lose its preferential access to the EU internal market. This negative impact would weaken to something over 6% if it negotiated a free trade agreement with the EU. The analysis also assumes that the reduction in the openness of the UK economy would lead to a fall in productivity and that migration controls would cause a decline in the labour force. The simulation results are again highly unfavourable for the UK. According to the OECD, UK GDP growth would slow by 0.5 pp in both 2017 and 2018 in the event of Brexit as compared to the scenario of staying in the EU. The deviation of growth would increase further to 1.5 pp in 2019 as a result of a hard Brexit. By 2020, real UK GDP would be 3% lower than in the baseline scenario.¹⁸

In the longer term, the Brexit mechanisms affecting the UK economy will change somewhat, according to the OECD. In place of uncertainty, structural changes will take hold in the economy. The loss of access to the EU single market will lead to a drop in the inflow of FDI into the UK. This will be reflected in lower innovation and a further drop in foreign trade. Trade and investment are important drivers of long-term economic growth. The OECD estimates the fiscal savings from stopping net transfers to the EU budget at 0.3%–0.4% of UK GDP. However, lower economic growth will reduce the UK government's tax revenue. Part of the savings will thus be used to offset these losses. As a result of all these effects, UK GDP will be over 5% smaller by 2030 than if the country stayed in the EU. This is equivalent to a reduction in economic growth of 0.3 pp over 2016 to 2030. Around 60% of this shock is accounted for by the lower level of productivity. In addition to the above central scenario, the OECD analysis offers optimistic and pessimistic alternatives to the long-term outlook. The former expects stronger deregulation and a smaller decline in trade and FDI. In such case, UK GDP would be only 2.7% lower in 2030 than if the UK stayed in the EU. The latter is symmetrical, but in the opposite direction, and leads to a loss of more than 7.5% of UK GDP.

1.4 Economists for Brexit (EfB)¹⁹

The opposite view of the effect of Britain's exit from the EU on its economy was presented at the end of last April by Economists for Brexit.²⁰ EfB is a group of economists who are convinced that it would be best for the UK to opt out of both the EU single market and its customs union, and trade with other countries entirely freely just under WTO rules.²¹ They believe that Brexit will bring clear economic benefits to the UK in the longer term. However, they admit to negative impacts in the shorter run (a rise in inflation and a fall in the exchange rate) stemming from increased uncertainty. They divide their contribution to the debate into eight parts according to the individual economic issues:

¹⁶ OECD (2016)

¹⁷ NiGEM – National Institute Global Econometric Model

¹⁸ The impact on the EU would be smaller – around 1% of GDP in the same period.

¹⁹ Economists for Brexit (2016)

²⁰ The group later changed its name to Economists for Free Trade.

²¹ In reality, however, this means no privileges. This assumption usually corresponds to the most pessimistic scenario modelled in the studies by other institutions.

- (dis)advantages of EU membership
- regulation
- trade
- employment and investment
- immigration
- the financial sector
- contributions to the EU budget
- redistribution (EU funds)

Of key importance is the section devoted to foreign trade. Unlike the mainstream, which considers the EU customs union as progress in free trade (as it cancels all tariffs between Member States, whereas trade under WTO rules is still burdened by tariffs despite all the progress made in recent decades), EfB views the EU customs union as a “walled garden”, which, with its preferential treatment, prevents the world from fully reaping the advantages of entirely free trade. It is particularly critical of the fact that the customs union protects certain industries (notably agriculture and manufacturing) from global competition, forcing higher prices on EU consumers. It therefore believes that leaving the EU will decrease prices and in turn, boost economic growth.²² Patrick Minford, one of the Economists for Brexit, quantified the Brexit gains at 4% of UK GDP in his model calculations. In addition to exit from the EU, his calculation assumes the abolition of all tariffs on goods imports to Britain. According to Minford, this would lead to a fall in consumer prices of 8% and a further expansion of the internationally competitive UK services sector at the expense of local manufacturing. Agriculture would receive direct grants from the Treasury to maintain its 1% share of GDP.

The UK would thus strike no trade deals and impose no import tariffs after Brexit. In support of the harmlessness of such a step, Minford argues that the UK is already successfully trading at “world” prices with the USA and China, so why not with the EU? But this is not entirely true. Imports to the UK from non-EU countries are subject to EU import tariffs, which make foreign products more expensive for consumers (British and EU-based firms producing similar goods thus currently have a price advantage). In turn, UK exports to the USA and China are subject to local tariffs (see Chart 2). If the UK leaves the EU and unilaterally cancels tariffs while the other world economies keep them in place, it will put its producers at a disadvantage against all the rest. However, EfB believes that as a net goods importer the UK will gain more from lower import prices than it will lose from its exporters being disadvantaged in international trade. It recommends that the government use some of the money it is currently sending to the EU budget to directly support selected viable firms in the future. Conversely, inefficient companies should fall. EfB thus sees Brexit as a kind of “economic reform” supporting creative destruction²³ and thereby enhancing the long-term growth potential of the UK economy.

One main thread runs through the remaining sections. This concerns quality of governance. EfB is convinced that the quality of governance in the EU over the last two decades has been poor. As the cause, it identifies a series of historical decisions that have gradually reduced the efficiency of most processes. As regards developments in the EU economy in recent years, EfB also blames the single European currency project, which it considers an unmitigated disaster. It dislikes the EU’s excessive regulatory zeal²⁴ and the misuse and misdirection of the EU’s funds.²⁵ According to EfB, the Common Agricultural Policy has been a huge waste of the EU’s resources. Price support systems and subsidies in the absence of a market failure are distortionary and result in a misallocation of resources. EfB claims that the above problems make EU membership economically disadvantageous and there are no benefits to offset them.

The arguments used in the EfB study and the results of its Brexit forecast for the UK economy were so unconventional that they sparked a response from the CEP. It published an article²⁶ pointing out the main

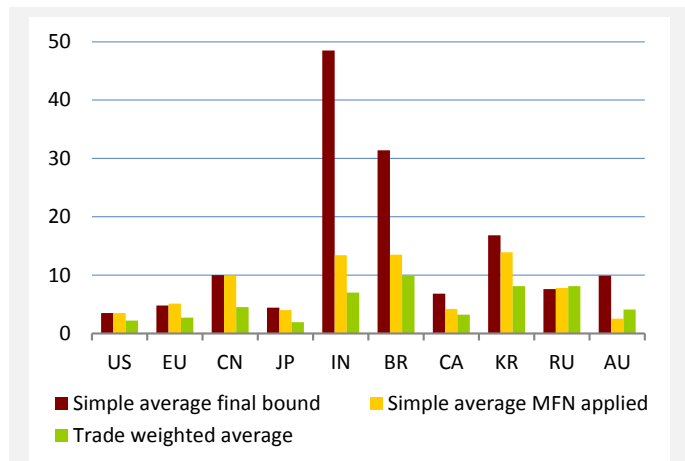


Chart 2 Goods tariffs in the ten largest economies

Source: WTO, IMF

Note: in %; the economies are ranked according to nominal GDP in 2016; US – United States, EU – European Union, CN – China, JP – Japan, IN – India, BR – Brazil, CA – Canada, KR – South Korea, RU – Russia, AU – Australia

²² However, the question remains whether UK firms would be able to compete with cheaper foreign products. If not, this would mean a drop in production in the UK, which would not certainly lead to higher growth. EfB expects the solution to be a structural shift in the economy – from industry even more towards services (which already account for 78% of GDP.)

²³ This term was defined by economist and political scientist Joseph Alois Schumpeter in 1942. It describes the situation where a breakthrough innovation causes original sectors, firms and processes to disappear and be replaced by new ones.

²⁴ It highlights four areas it considers burdensome: environmental regulation (especially support for renewables), financial regulation (and its impact on the City of London), social legislation (such as the Working Time Directive and the Gender Equality Directive) and “thousands” of regulations to ban substances and manage processes (ranging from art auctions to herbal medicines).

²⁵ An analysis using the European Commission’s QUEST model revealed that the impact of the EU’s structural and regional funds on GDP is negative in eight EU countries, one of them being the UK (HM Treasury, 2015).

²⁶ Dhingra et al. (2016b)

flaws in Minford's approach. The first, according to the CEP, is that his proposed solution is politically unworkable and hence highly unrealistic. No country has ever unilaterally removed all tariffs and thus put its own producers at a disadvantage compared to their competitors. The CEP also criticises Efb's argument that Britain should not be worried about manufacturing firms going bankrupt, as this will lead to a transfer of resources to the more efficient services sector. Such a step, the CEP believes, would effectively wipe out manufacturing in the UK. However, a much more serious problem would be growth in wage inequality. The CEP estimates that skilled workers' nominal wages would increase by about 11%, while unskilled workers' wages would fall by 14%. As described above, the CEP analysis nonetheless confirms that the Minford scenario of unilateral tariff removal does indeed lead to better results than the classic WTO scenario (with mutual tariffs based on the MFN principle). Despite that, the impacts of Brexit remain significantly negative in both cases, according to the CEP.

The second problem is Minford's approach to modelling the impact that Brexit will have on UK foreign trade. Minford claims that prices in the EU are 20% higher than elsewhere in the world and expects them to fall by 10% after Brexit.²⁷ He says that prices are higher due to EU protectionism and regulation. However, he ignores the fact that the price differences may instead be due to different product quality (for example, a children's toy made in China may not be a direct equivalent to a German toy, and Europeans seem to prefer more expensive and higher-quality clothes than Americans). In such case, Brexit would not fundamentally affect prices. Additionally, the Liverpool model Minford uses for his analysis is an old trade model that does not reflect current knowledge about empirical relationships in international economics, namely that:

- trade flows between two countries grow as those countries' economies expand,
- trade flows decrease with rising trade costs (import tariffs, transport costs and other barriers),
- distance matters – the closer together countries are, the more they trade.

Instead, his model assumes homogeneous products and disregards the gravity equation,²⁸ with the UK trading only with a fictitious "world economy" at "world" prices. An increase in trade barriers (albeit solely non-tariff ones) between the UK and the EU thus cannot be incorporated into the model. As a result, Brexit does not have any costs in the simulation. Conversely, the benefits are greatly overestimated, as the model assumes that products made in the UK are the same as those made elsewhere. Minford defines his concept of Brexit as a 10% drop in import prices, so the simulation leads to the same drop in the prices of UK products. In reality, however, international trade is fairly diverse, because countries use their comparative advantages (for example, the UK does not grow citrus fruits or rice, but does produce famous whiskies).

1.5 National Institute of Economic and Social Research (NIESR)²⁹

The final study of the macroeconomic impacts of Brexit described here is an empirical analysis produced by the NIESR using the NiGEM model. Brexit enters the model as a complex shock calibrated on the basis of a detailed examination of the mechanisms that could transmit such a major structural change across the economy. According to the NIESR's economists, a Brexit decision would in the short term mainly affect the financial markets and cause corporate investment plans to be delayed (due to increased uncertainty). Changes in expectations regarding long-term structural shifts of the economy would have an equally important impact. The NIESR first examines the above effects separately so as to better explain the mechanism whereby the shocks spread through the economy.

The first direct impact of Brexit, according to the NIESR, would be a sharp and significant depreciation of sterling (of about 20% in effective terms), which would result, via higher import prices, in an increase in inflation (of 2.5 pp compared to the baseline scenario of staying in the EU). However, the NIESR expects both these effects to fade relatively quickly.³⁰ The impacts of these changes on the UK economy would be positive, as the depreciation would give British producers a price advantage over foreign imports to the UK. The increase in net exports would then positively affect GDP. The second impact of Brexit on the financial markets would be a higher cost of borrowing for the government, firms and households. This would lead to a drop in private investment, which would be 8% lower by the end of 2017 than in the baseline scenario. Household consumption would also respond with a slight lag, reaching its largest deviation (-1%) in mid-2018. This would have a negative impact on economic activity. The third mechanism examined is the effect of uncertainty. It would also lead to a drop in investment, but a much faster and bigger one (7%–8% against the baseline scenario at the start of 2017) than that caused by the cost of borrowing.

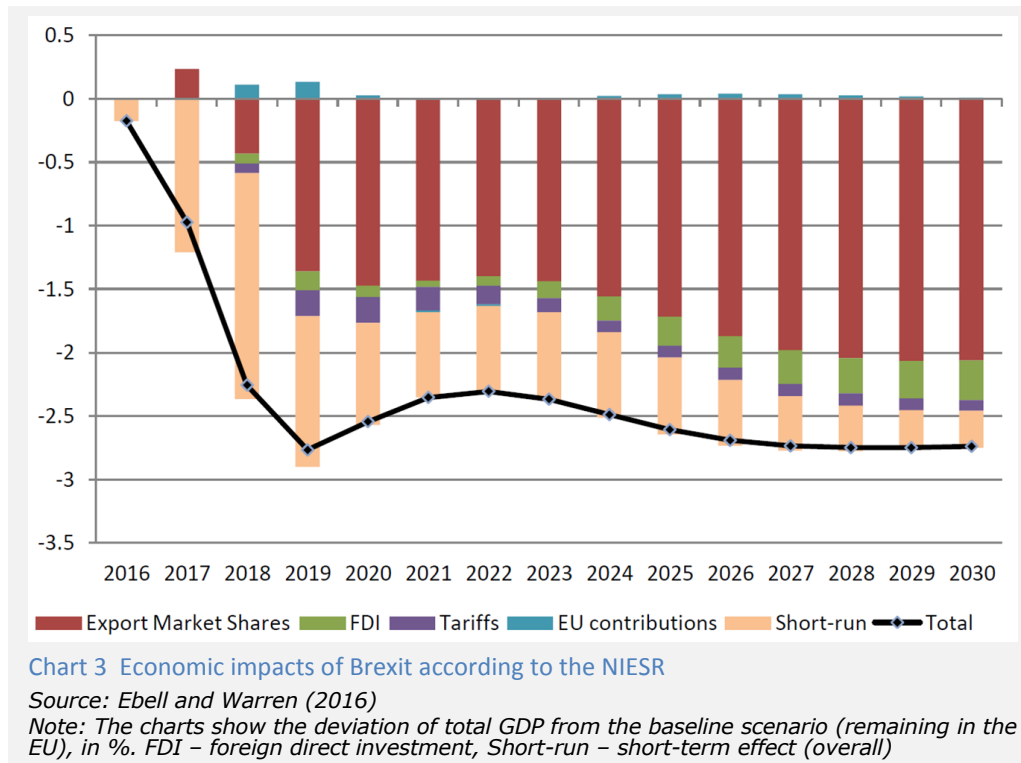
²⁷ He uses relatively old data (from 2002).

²⁸ First estimated by Nobel Prize laureate Jan Tinbergen in 1962, it describes the above three basic empirical properties of international trade flows.

²⁹ Baker et al. (2016) and Ebell and Warren (2016)

³⁰ However, a comprehensive assessment of all the effects taken together reveals that the overall impacts of Brexit on inflation and the exchange rate would be longer-lasting. The model indicates a rise in inflation of 0.7 pp in 2016 compared with the baseline scenario. The deviation will widen to 2.2 pp in 2017 and only then start narrowing. The impact of Brexit on inflation will not fade out fully until 2021. The overall impact of Brexit on the sterling effective exchange rate is permanent. According to the NIESR prediction, after weakening by 7.3% (against the baseline scenario) in 2016, the pound will record a negative deviation of 16% in 2017, which it will maintain until the end of the forecast period (2030).

The NIESR analysts were very optimistic about how long these short-term effects would influence the UK economy, expecting them to last only two years. However, their analysis also reflects expectations about the long-term consequences of Brexit at this horizon (a reduction in trade with the EU, a decline in FDI inflows and an end to payments to the EU budget).³¹ After they are taken on board, the net effect of Brexit on UK GDP would be distinctly negative in the short run according to the NIESR simulation (see Chart 3).



To quantify the impact of Brexit in the long term, the NIESR chose the WTO scenario, under which the UK will have no free trade agreement with the EU. It focuses on the four main implications which, according to the NIESR, such a structural change would have for the UK economy as from 2018:

- a reduction in trade with EU Member States,
- a slight increase in tariffs (of 5%),³²
- a decline in FDI inflows to the UK (of 24%),
- an end to net contributions to the EU budget (calculated at 0.3% of UK GDP on average net of direct EU payments to the UK private sector).

The reduction in trade with the EU is modelled by a 50% decrease in the proportion of UK imports going to EU countries³³ and represents the fundamental mechanism whereby Brexit will damage the UK economy. This is evident from Chart 3, which summarises the short-term and long-term effects of leaving the EU. The reduction in trade acts as a negative demand shock to UK exports, accompanied by a fall in UK export prices and a depreciation of the pound, which raises import prices and hence inflation (all relative to the baseline scenario). These changes in import and export prices result in a long-run deterioration in the terms of trade. The final result is lower economic activity than in the case of remaining in the EU.

Unlike the reduction in trade, the introduction of tariffs leads to growth in both import and export prices (compared with the baseline scenario), as both the UK and EU economies are disadvantaged by the tariff barriers. This results in a relative decline in British imports and exports, which will then negatively affect GDP, albeit far less so than the above reduction in trade. The decline in FDI inflows, which will be reflected in lower private sector investment, has a similarly small negative impact in the simulation. Only the end to fiscal transfers to the EU budget would affect GDP positively, though to a negligible extent.

Overall, Brexit would thus damage the UK from the macroeconomic point of view. The NIESR estimated that, due to Brexit, UK GDP would be 2.8% lower in 2019 than if Britain stayed in the EU. In the longer term, the negative impacts initially decrease somewhat but then intensify, with the deviation expected to

³¹ This approach, which (where appropriate) takes into account the forward-looking nature of economic agents in the short run, is much more realistic than, for example, the approach of the above OECD study. The latter assumes strictly backward-looking agents in the short term and switches the model set-up to fully forward-looking for the long run only.

³² The absolute size of the individual shocks was chosen to be in line with earlier results of empirical research.

³³ This is based on the results of empirical studies using gravity models of trade in goods (Baier et al., 2008) and services (van der Marel and Shepherd, 2013).

reach 2.7% in 2030. Compared with the OECD study described above, which also uses the NiGEM model, the NIESR analysis is less sceptical (see Table 1, which provides an overview of the results of all the studies covered). In the authors' view, this is mainly because in its scenario the NIESR does not explicitly assume a drop in productivity as result of the decrease in the openness of the UK economy.

Institution scenario	PwC		CEP		OECD	EfB	NIESR
	FTA	WTO	FTA	WTO	WTO/FTA	WTO	WTO
<i>short term</i>	2020		<i>static approach</i>		2020	2020	2020
GDP	-3.1%	-5.5%	-1.3%	-2.6%	-3.3%	4%	-2.6%
<i>long term</i>	2030		<i>dynamic approach</i>		2030	–	2030
GDP	-1.2%	-3.5%	-6.3% – -9.5%		-5.1%	–	-2.7%

Table 1 Comparison of the results of individual studies on the expected impact of Brexit on the UK economy

Source: PwC (2016), Dhingra et al (2016a), OECD (2016), Economists for Brexit (2016), Ebell and Warren (2016)

Note: The figures show the deviations of total GDP from the baseline scenario (remaining in the EU).

2 Conclusion

A majority of voters in last year's referendum were of the opinion that Britain should leave the EU, despite warnings from most (UK and world) economists that this would do significant damage to the UK economy. Economists for Brexit (EfB) were the exception to this consensus. Their empirical analysis did not stand up to other studies in terms of either methodology or data, but their contribution was beneficial to the debate. Patrick Minford's revolutionary idea about the advantages of unilaterally removing customs barriers may remain an example of philosophical extremism, but the rest of the EfB study offers an unsettling picture of the inefficiencies in how the EU currently operates, inefficiencies which inevitably hinder its economic growth. Instead of drawing up growth-enhancing strategies³⁴ the EU might be better off eliminating its current, oft-described shortcomings. As the case of the UK demonstrates, it might then be spared a repeat of the current worries relating to the negotiation of the first-ever exit of a member state, which will have negative economic impacts on the EU itself. There are other malcontent countries besides the UK.

Only in the years ahead will we get a clearer idea of whether Brexit will truly harm the UK economy in the long run, and of how large the damage will be. The overall economic consequences of Brexit will depend mainly on the future trade arrangements between the UK and the EU. However, the above analyses of the economic impacts show quite clearly that the softer Brexit is, the better it will be for the British economy. Nonetheless, the process of disintegration of such a specific and close relationship will be such a fundamental structural change for the UK (taking place, moreover, over quite a long period of time) that it will never be possible to retrospectively identify with any certainty which of the subsequent economic developments were direct consequences of Brexit.

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³⁴ The EU's comprehensive economic strategy for the current decade, called Europe 2020, was assessed by Pavla Břízová in an article published in last year's March issue of *Global Economic Outlook* (Břízová, 2016).

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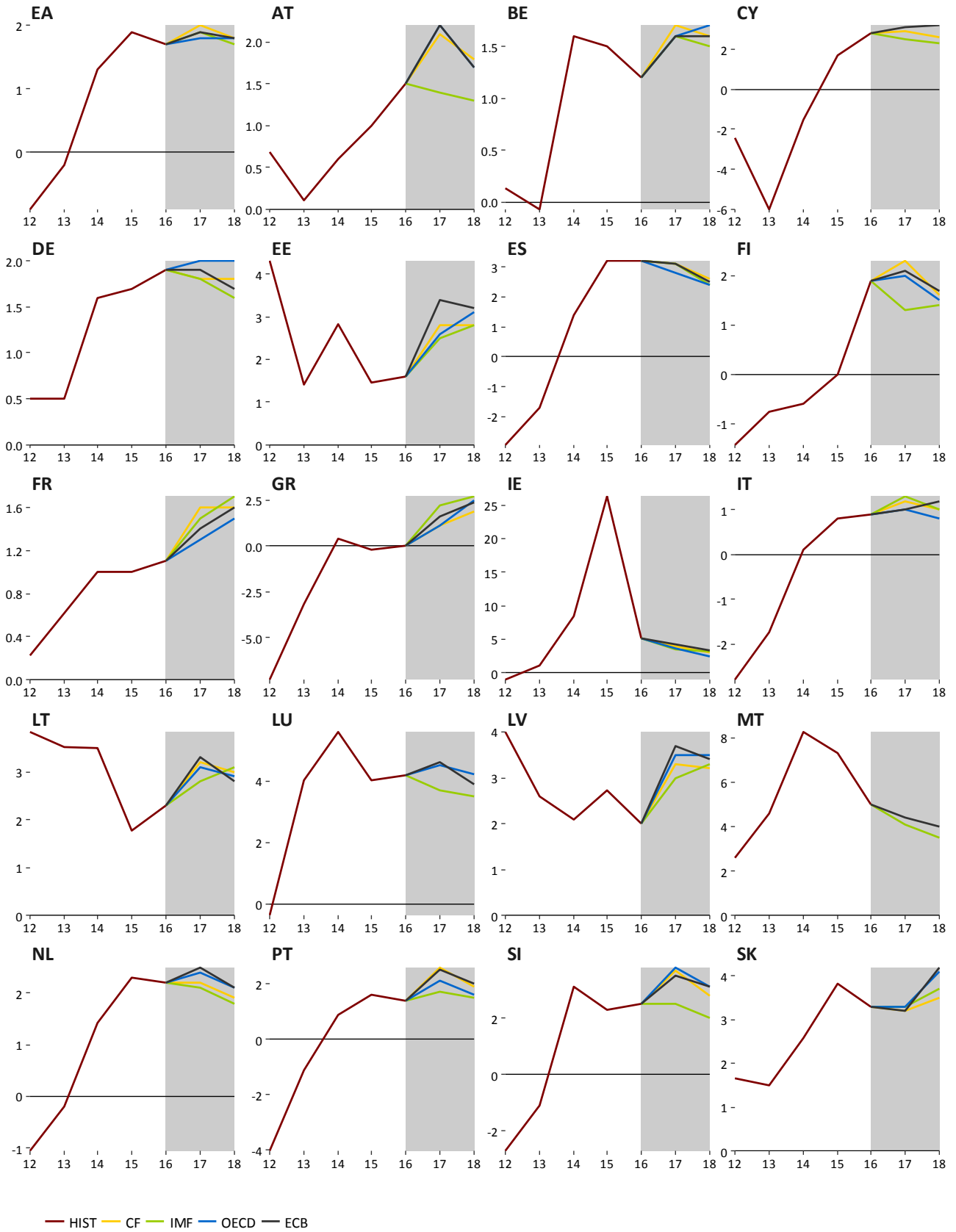
A1. Change in GDP predictions for 2017

	CF		IMF		OECD		CB / EIU	
EA	+0.1	2017/8	+0.2	2017/7	+0.2	2017/6	+0.1	2017/6
		2017/7				2017/4		
DE	+0.1	2017/8	+0.2	2017/7	+0.2	2017/6	+0.1	2017/6
		2017/7				2017/4		
US	-0.1	2017/8	-0.2	2017/7	-0.3	2017/6	+0.1	2017/6
		2017/7				2017/4		
UK	0	2017/8	-0.3	2017/7	0	2017/6	-0.2	2017/8
		2017/7				2017/4		
JP	0	2017/8	+0.1	2017/7	+0.2	2017/6	+0.2	2017/7
		2017/7				2017/4		
CN	+0.1	2017/8	+0.1	2017/7	+0.1	2017/6	+0.2	2017/8
		2017/7				2017/4		
IN	0	2017/8	0	2017/7	0	2017/6	0	2017/8
		2017/7				2017/4		
RU	+0.1	2017/7	0	2017/7	+0.6	2017/6	0	2017/7
		2017/6				2017/4		
BR	-0.1	2017/7	+0.1	2017/7	+0.7	2017/6	0	2017/8
		2017/6				2017/4		

A2. Change in inflation predictions for 2017

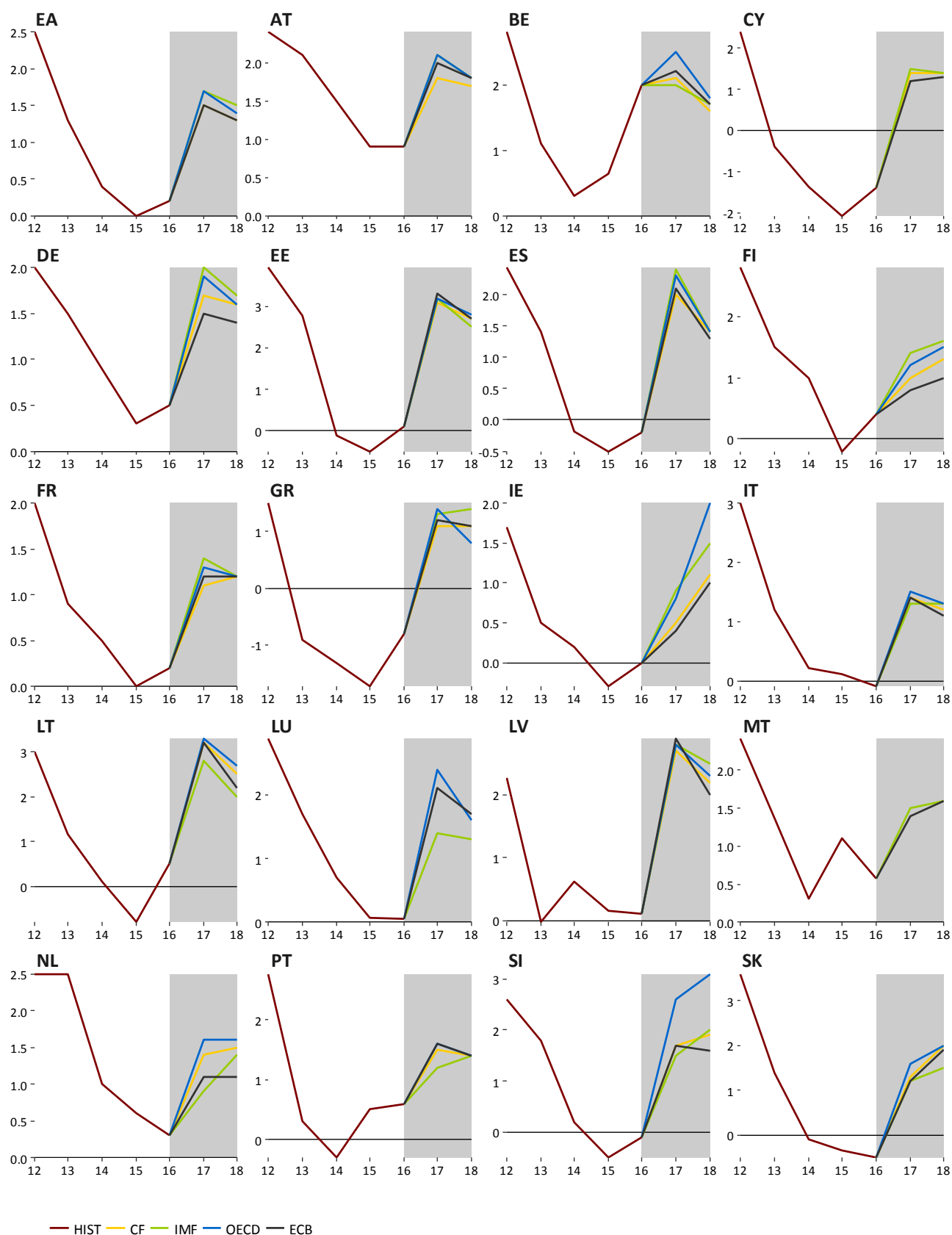
	CF		IMF		OECD		CB / EIU	
EA	0	2017/8	+0.6	2017/4	+0.5	2017/6	-0.2	2017/6
		2017/7				2016/10		
DE	0	2017/8	+0.5	2017/4	+0.5	2017/6	+0.1	2017/6
		2017/7				2016/10		
US	-0.1	2017/8	+0.4	2017/4	+0.6	2017/6	-0.3	2017/6
		2017/7				2016/10		
UK	0	2017/8	0	2017/4	+0.4	2017/6	0	2017/8
		2017/7				2016/10		
JP	0	2017/8	+0.5	2017/4	+0.3	2017/6	-0.3	2017/7
		2017/7				2016/10		
CN	0	2017/8	+0.1	2017/4	-0.7	2017/6	0	2017/8
		2017/7				2016/10		
IN	-0.2	2017/8	-0.4	2017/4	-0.4	2017/6	-0.4	2017/8
		2017/7				2016/10		
RU	+0.1	2017/7	-0.5	2017/4	-1.7	2017/6	0	2017/7
		2017/6				2016/10		
BR	-0.3	2017/7	-1.0	2017/4	-1.8	2017/6	-0.3	2017/8
		2017/6				2016/10		

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	GDP	gross domestic product
bbl	barrel	GR	Greece
BE	Belgium	ICE	Intercontinental Exchange
BoE	Bank of England	IE	Ireland
BoJ	Bank of Japan	IEA	International Energy Agency
bp	basis point (one hundredth of a percentage point)	IMF	International Monetary Fund
BR	Brazil	IN	India
BRIC	countries of Brazil, Russia, India and China	INR	Indian rupee
BRL	Brazilian real	IRS	Interest Rate swap
CB	central bank	ISM	Institute for Supply Management
CB-CCI	Conference Board Consumer Confidence Index	IT	Italy
CB-LEII	Conference Board Leading Economic Indicator Index	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
CY	Cyprus	LV	Latvia
DBB	Deutsche Bundesbank	MT	Malta
DE	Germany	NL	Netherlands
EA	euro area	OECD	Organisation for Economic Co-operation and Development
ECB	European Central Bank	OECD-CLI	OECD Composite Leading Indicator
EC-CCI	European Commission Consumer Confidence Indicator	PMI	Purchasing Managers' Index
EC-ICI	European Commission Industrial Confidence Indicator	PP	percentage point
EE	Estonia	PT	Portugal
EIA	Energy Information Administration	QE	quantitative easing
EIU	Economist Intelligence Unit	RU	Russia
ES	Spain	RUB	Russian rouble
EU	European Union	SI	Slovenia
EUR	euro	SK	Slovakia
EURIBOR	Euro Interbank Offered Rate	TLTRO	targeted longer-term refinancing operations
Fed	Federal Reserve System (the US central bank)	UK	United Kingdom
FI	Finland	UoM-CSI	University of Michigan Consumer Sentiment Index
FOMC	Federal Open Market Committee	US	United States
FR	France	USD	US dollar
FRA	forward rate agreement	USDA	United States Department of Agriculture
FY	fiscal year	WEO	World Economic Outlook
GBP	pound sterling	WTI	West Texas Intermediate (crude oil used as a benchmark in oil pricing)
		ZEW-ES	ZEW Economic Sentiment

