GLOBAL ECONOMIC OUTLOOK - JANUARY

Monetary Department
External Economic Relations Division

2017

CNB CZECH NATIONAL BANK

Cut-off date for data
13 January 2017

CF survey date
9 January 2017

GEO publication date
20 January 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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I. SUMMARY

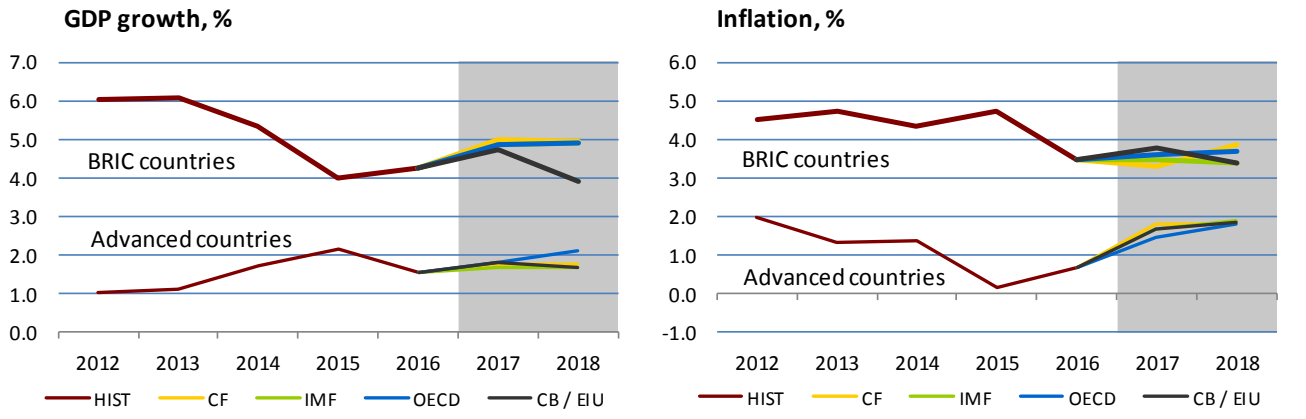
This year's first issue of Global Economic Outlook presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. Starting with this issue, our regular monitoring will include the United Kingdom, due not least to one of the most keenly awaited events of this year: the actual start of Brexit. In this issue, our analysis focuses on one of the most discussed phenomena of the day – the decline in equilibrium real interest rates in the global economy. We present two theories – one that attributes the phenomenon of low interest rates to structural changes and speaks in favour of a permanent decline in rates, and another arguing that the fall is temporary and based on cyclical swings caused mainly by the financial cycle.

The global economic outlooks for 2017 and 2018 are more optimistic compared to last year. The global economy is expected to grow by 2.8% this year (thanks mainly to the Asian-Pacific region), rising to slightly 2.9% in 2018. As regards the advanced economies, the US economy should achieve robust economic growth of over 2% despite the recent and likely future monetary policy tightening. The growth of the euro area economy should stabilise at around 1.5% in the next two years, with a very similar figure recorded by its strongest economy – Germany. Among the G7 countries, Canada should also maintain solid growth. By contrast, the UK will be negatively affected by the launch of Brexit, which will lower its growth outlooks noticeably below the 2% GDP growth expected for 2016. The Japanese economy will slow slightly in the coming years, with GDP growth fluctuating around 1%. Inflation is still expected to be below the general reference level of 2% in the vast majority of advanced countries this year. Only a handful of countries are expected to reach that level in 2017 (the USA, Canada and the UK).

The outlooks for emerging economies, represented by the BRIC group, remain mixed for the next two years. On the one hand, China and particularly India are showing strong economic growth. However, growth in China will gradually slow to 6% and growth in India has also been faltering recently, although it remains high at around 7%. The latest inflation forecasts for China and India predict inflation of just above 2% and 5% respectively until the end of 2018. The two other BRIC economies, Russia and Brazil, are and will continue to be considerably worse off. Unlike India and China, Brazil and Russia remained in recession last year and their growth outlooks for 2017 are only just above 1%. The good news for these countries is that they should succeed in keeping their inflation rates at 5%–6% this year.

The outlooks for euro area interest rates remain very low, with no sign of them rising markedly before the end of 2017. By contrast, US rates can be expected to increase further this year. According to CF, the US dollar will appreciate slightly at the one-year horizon against all the monitored currencies except the Brazilian real, against which it is expected to strengthen sharply. The price of Brent crude oil is expected to average around USD 57 a barrel this year and the next. Prices of industrial metals are expected to decline slightly at the one-year horizon. By contrast, food commodity prices are expected to rise modestly.

GDP growth and inflation development and outlook in monitored countries



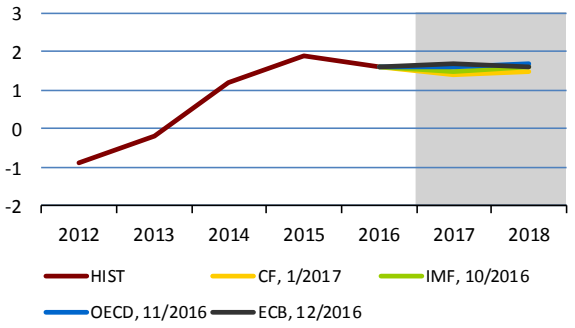
Note: The figures represent the weighted averages of historical series / outlooks in individual countries. The weights are based on nominal GDP measured in USD during 2011–2015 (source: EIU). Advanced countries: euro area, United States, United Kingdom, Japan. BRIC countries: China, India, Russia, Brazil.

II.1 Euro area

In 2016 Q4, the euro area continued to record a gradual economic recovery, the outlook for which is subject to considerable political uncertainty. Coincident and leading indicators as of the end of 2016 are favourable despite the uncertainty associated with Brexit and the outcome of the US elections and the referendum in Italy. Industrial production recorded solid growth (of 3.2% year on year) in November, with industrial output being strong across euro area countries. Retail sales fell slightly in the same month from a high level in October, and their year-on-year growth stayed above 2%. Unemployment remained at the five-year low of 9.8% reached in October. Consumer confidence indicators rose markedly. The December PMI in manufacturing (54.9) also suggests an economic upswing. It thus seems that the political uncertainty has not affected growth yet, but it poses downside risks for the outlooks. Stronger oil price growth and consequently higher inflation, which would lead to a drop in households' purchasing power, may also lead to revisions in the same direction. CF estimates euro area growth last year at 1.5%. Like the other institutions, it expects a similar figure this year and the next. However, the outlooks are very mixed across euro area countries (see the chart on the next page).

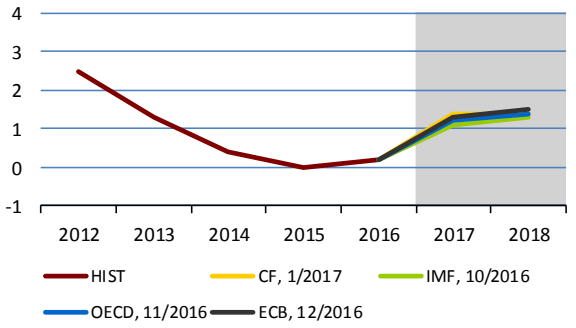
Inflation in the euro area rose at the end of 2016, but is not expected to reach the ECB's inflation target next year. According to the flash estimate, headline inflation accelerated in December by 0.5 pp compared to November to 1.1%. This increase was due mainly to a positive contribution of energy prices. By contrast, core inflation increased by only 0.1 pp to 0.9% in the same period. For the first time in more than three years, producer prices went up year on year in November on the back of rising energy prices and will thus drive headline consumer price inflation higher in the months to come. However, according to the monitored outlooks it will stay between 1.1% and 1.5% this year and the next. Like in the other economies, euro area bond yields increased at the close of 2016 and their outlook is slightly rising. By contrast, 3M EURIBOR market outlooks remain negative over the entire outlook horizon.

GDP growth, %



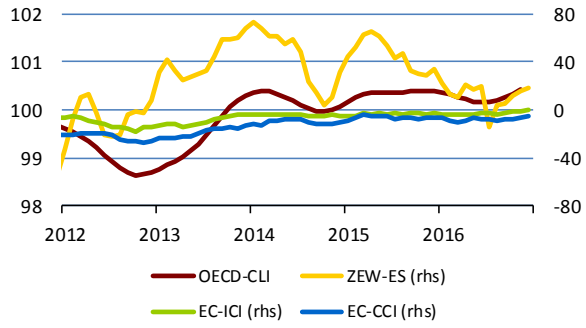
	CF	IMF	OECD	ECB
2017	1.4	1.5	1.6	1.7
2018	1.5	1.6	1.7	1.6

Inflation, %



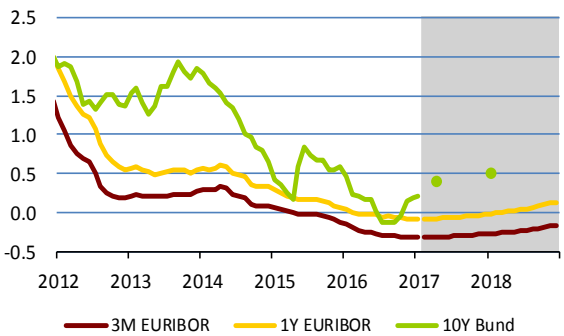
	CF	IMF	OECD	ECB
2017	1.4	1.1	1.2	1.3
2018	1.4	1.3	1.4	1.5

Leading indicators



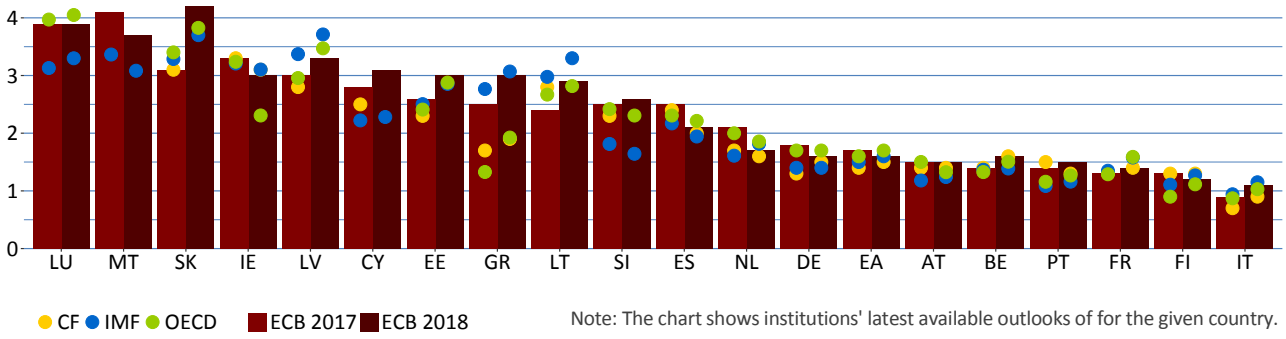
	OECD-CLI	ZEW-ES	EC-ICI	EC-CCI
10/16	100.3	12.3	-0.6	-8.0
11/16	100.4	15.8	-1.1	-6.2
12/16		18.1	0.1	-5.1

Interest Rates, %



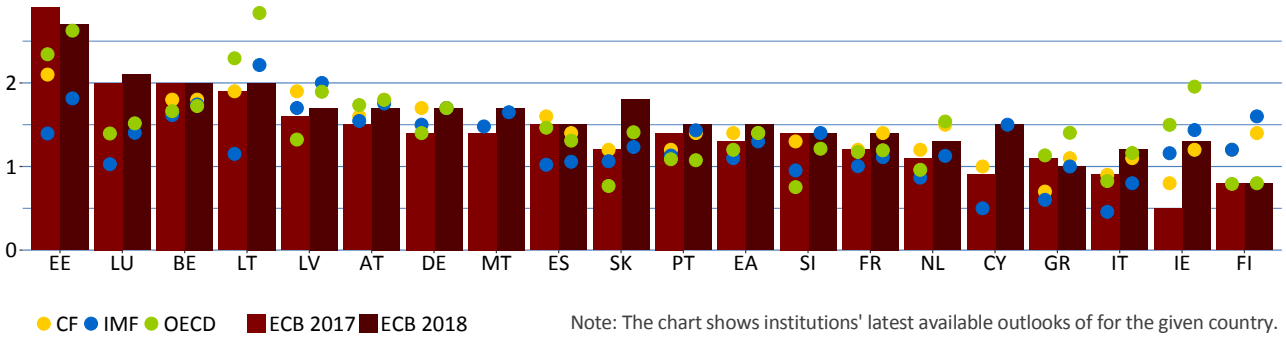
	12/16	01/17	04/17	01/18
3M EURIBOR	-0.32	-0.32	-0.32	-0.27
1Y EURIBOR	-0.08	-0.09	-0.07	-0.02
10Y Bund	0.20	0.21	0.40	0.50

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



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

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

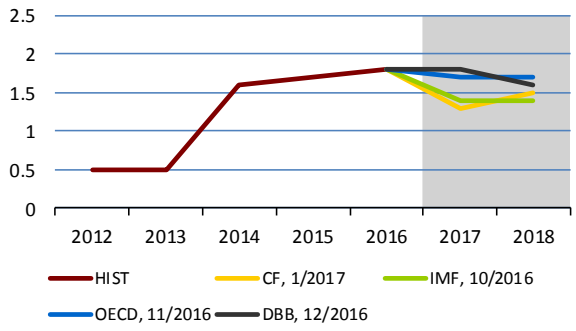


Note: The chart shows institutions' latest available outlooks of for the given country.

II.2 Germany

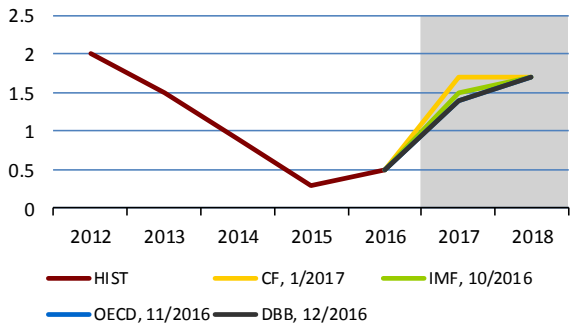
German GDP growth is expected to slow this year. However, the rate of slowdown differs across the monitored institutions. CF has been expecting the lowest GDP growth rate for several months now, while the Bundesbank is the most optimistic. All the monitored institutions forecast GDP growth for 2018 at 1.6% on average. Last year the German economy grew by 1.9%, driven by domestic demand from both the private and government sectors. The IFO and ZEW leading indicators, which were favourable in December, also indicate that the German economy is in good shape. The PMI in manufacturing rose at a higher-than-expected rate, too. Inflation pressures have started to emerge in the economy. Industrial producer prices rose slightly year on year in November for the first time in more than three years. Consumer price inflation more than doubled to 1.7% in December. CF therefore raised its outlook for this year.

GDP growth, %



	CF	IMF	OECD	DBB
2017	1.3	1.4	1.7	1.8
2018	1.5	1.4	1.7	1.6

Inflation, %



	CF	IMF	OECD	DBB
2017	1.7	1.5	1.4	1.4
2018	1.7	1.7	1.7	1.7

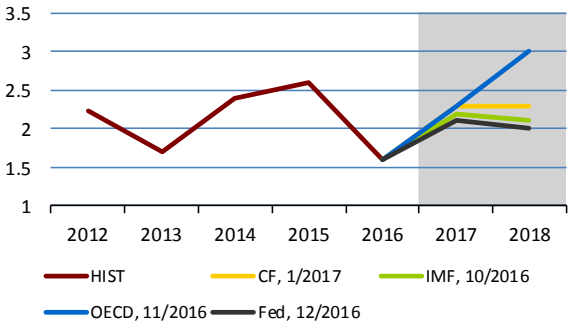
II.3 United States

In line with financial market expectations, the Fed raised the target range for its policy rate to 0.50%–0.75% in December. The central bank also announced it would continue to reinvest maturing bonds. It will not end the reinvestments until sufficient monetary policy room is created to allow a response in the event of an unexpected slowdown in economic growth. From the Fed's perspective, US economic growth is sufficiently strong and inflation has been rising steadily. The macroeconomic outlook for 2017 was also revised, with three rate hikes instead of two (totalling 75 bp) now expected. CF analysts expect similar developments for the target range for the policy rate. However, the economic outlook may be affected by planned changes to fiscal policy after Donald Trump becomes president (in particular, higher infrastructure spending, lower taxes and changes in the area of foreign trade). The announced changes bolstered financial market optimism and hence fostered stock market growth and appreciation of the US dollar against other currencies, at the end of 2016.

The labour market improved further, with wage growth in particular coming as a positive surprise. Non-farm payrolls rose by 156,000 in December, while the unemployment rate increased slightly (to 4.7%). The average hourly wage increased by 2.9% year on year. The labour market situation was reflected in a rise in consumer optimism at the close of 2016. Year-on-year retail sales growth reached a solid 3.8% in November, while the year-on-year decline in industrial production slowed again (to 0.6%). The leading PMI indicator reached a two-year high in December (54.7).

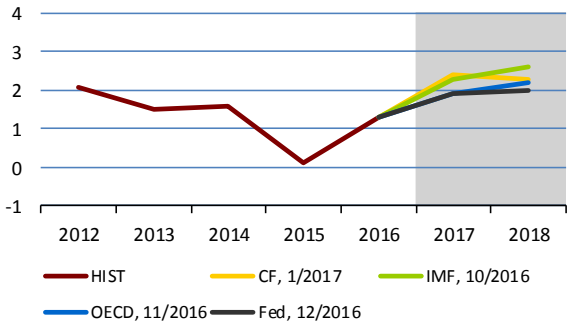
The November inflation figures confirmed steady growth of inflationary pressures in the US economy. Annual headline consumer price inflation grew to 1.7%, while core inflation remained at the October level of 2.1%. In addition to higher rents, prices are being affected by the improvement in the labour market. The January CF saw no change in outlook compared to the previous month, while the Fed's forecast for GDP growth in 2017 shifted upwards slightly.

GDP growth, %



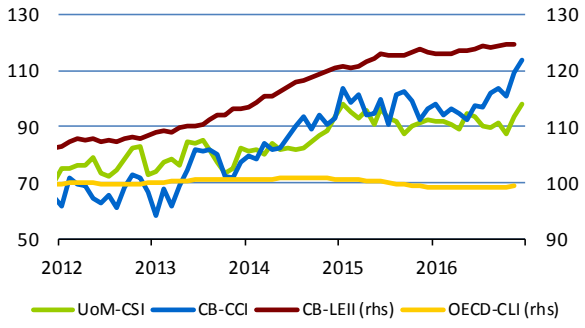
	CF	IMF	OECD	Fed
2017	2.3	2.2	2.3	2.1
2018	2.3	2.1	3.0	2.0

Inflation, %



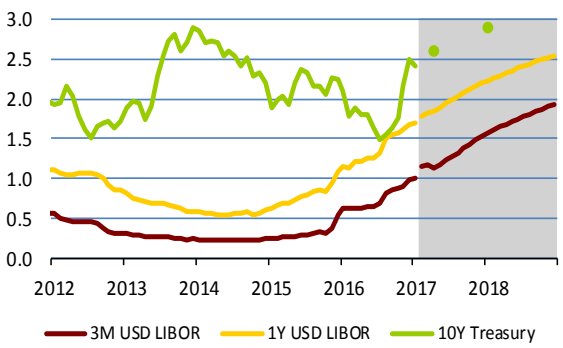
	CF	IMF	OECD	Fed
2017	2.4	2.3	1.9	1.9
2018	2.3	2.6	2.2	2.0

Leading indicators



	UoM-CSI	CB-CCI	CB-LEII	OECD-CLI
10/16	87.2	100.8	124.6	99.3
11/16	93.8	109.4	124.6	99.4
12/16	98.2	113.7		

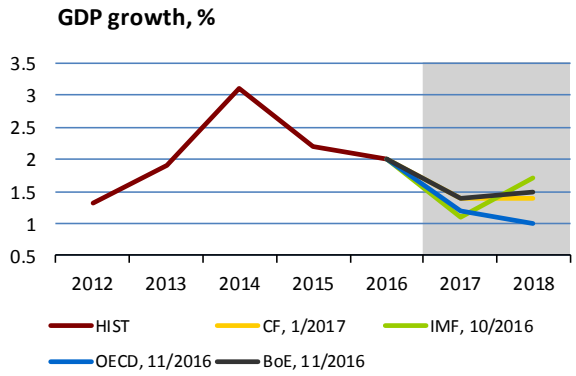
Interest Rates, %

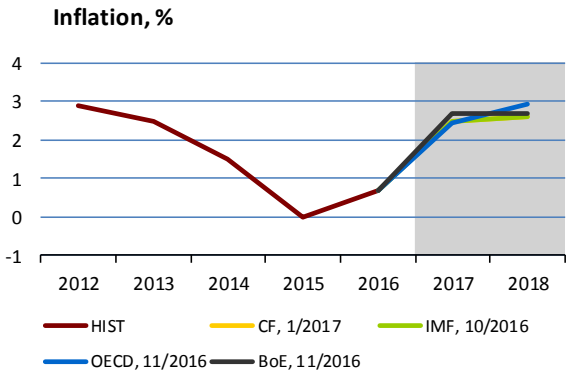


	12/16	01/17	04/17	01/18
USD LIBOR 3M	0.98	1.01	1.12	1.58
USD LIBOR 1R	1.67	1.67	1.85	2.22
Treasury 10R	2.49	2.41	2.60	2.90

II.4 United Kingdom

Despite initial concerns, the result of the June referendum did not slow the UK economy in the months that immediately followed. GDP rose by 2.2% year on year in Q3 (the highest figure in five quarters). Quarter-on-quarter growth remained at 0.6%, supported by growth in household consumption and private investment. A drop in net exports, occurring despite a sharp depreciation of the pound, acted in the opposite direction. However, the latest data indicate that growth probably slowed slightly at the end of last year. The December CF thus estimates that the UK economy expanded by 2% in 2016 as a whole. While purchasing managers are optimistic about future developments (the PMI in both services and industry is about 56 points on average), CF forecasts a slowdown in the GDP growth rate to 1.4% for the next two years. Inflation reached 1.2% in November and is expected to rise further due to the weak pound. It will thus be noticeably above the BoE's target of 2% this year and the next.



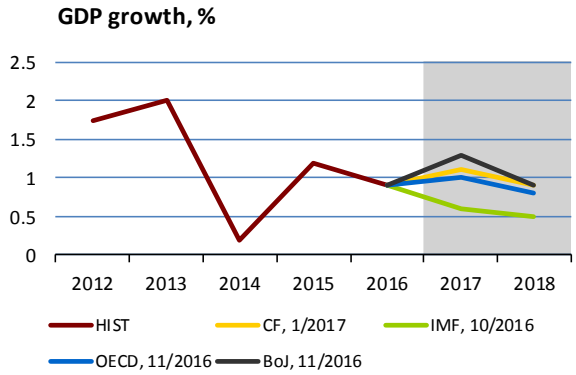


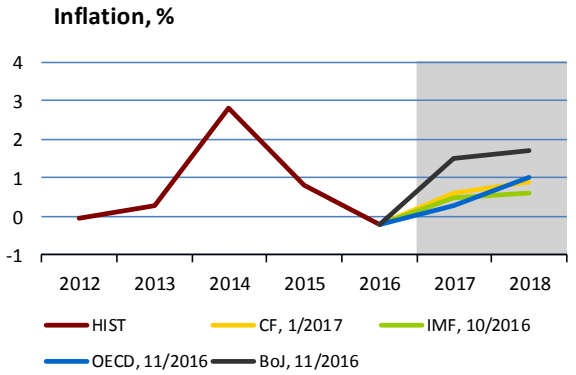
	CF	IMF	OECD	BoE
2017	1.4	1.1	1.2	1.4
2018	1.4	1.7	1.0	1.5

	CF	IMF	OECD	BoE
2017	2.5	2.5	2.4	2.7
2018	2.6	2.6	2.9	2.7

II.5 Japan

The situation in the Japanese economy was favourable at the end of 2016. Industrial production increased in November, due mainly to electrical and transport equipment production. The PMI in manufacturing went up in December. Output, new orders, exports and employment are all rising in this sector according to purchasing managers' assessments. Retail sales rose year on year in November, due in part to slight wage growth. By contrast, household expenditure dropped and unemployment edged up to 3.1%. However, consumer confidence improved in all categories in December. The January CF expects slightly better growth of the Japanese economy (by 0.1 pp) in 2017. Inflation accelerated to 0.5% in November, driven by growth in prices of fresh food. The Bank of Japan left monetary policy unchanged at its December meeting. CF raised its inflation forecast for this year by 0.1 pp in January.



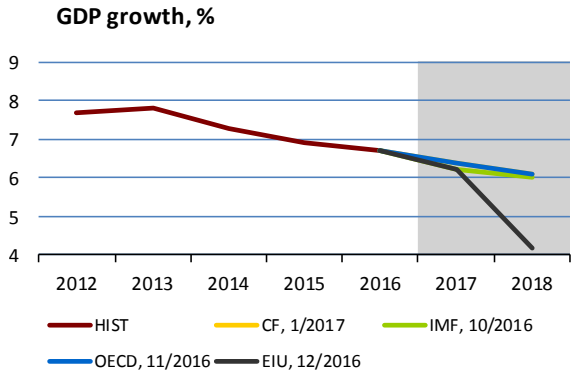


	CF	IMF	OECD	BoJ
2017	1.1	0.6	1.0	1.3
2018	0.9	0.5	0.8	0.9

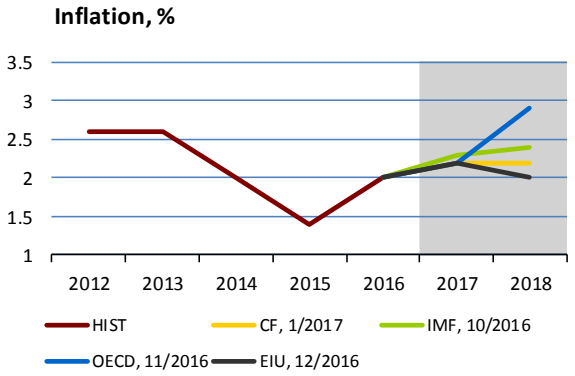
	CF	IMF	OECD	BoJ
2017	0.6	0.5	0.3	1.5
2018	0.9	0.6	1.0	1.7

III.1 China

China's official GDP growth target for 2017 is in the range of 6.5%–7.0%. Many indicators are suggesting that the actual figure will be closer to its lower end. The government will have the challenge of coping with debt, capital outflows and speculative bubbles without jeopardising domestic firms and triggering a chain of bankruptcies. At the end of 2015 the country faced substantial capital outflows and hence pressure to weaken the currency against the dollar. It introduced a series of administrative measures to control or limit transfers abroad (approvals for large transfers, higher lending costs in Hong Kong). Forex reserves have been falling for six straight months now. The central bank also changed the composition of the CFETS index it uses to monitor the renminbi rate. The index now consists of 24 currencies (instead of 13) and the weight of the dollar has dropped to 22.4%, so the sharp weakening of the renminbi against the dollar will be less reflected in the index. CF expects GDP growth to slow in the next two years amid stable inflation.



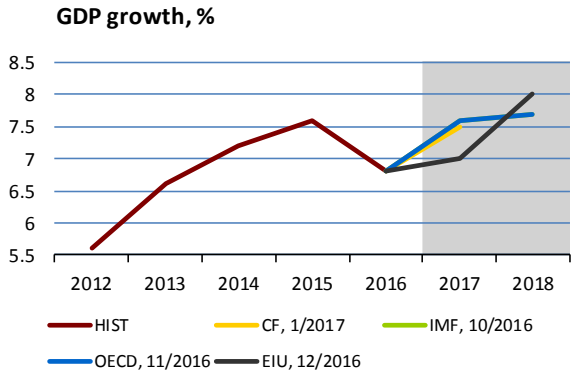
	CF	IMF	OECD	EIU
2017	6.4	6.2	6.4	6.2
2018	6.1	6.0	6.1	4.2



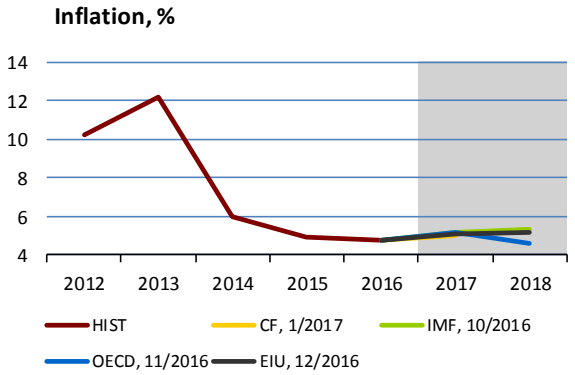
	CF	IMF	OECD	EIU
2017	2.2	2.3	2.2	2.2
2018	2.2	2.4	2.9	2.0

III.2 India

Indian industrial production surged year on year in November due to rising production in the manufacturing and energy industries and higher mining output. However, the PMI in manufacturing slid into the contraction band in December. Output growth, new orders and exports were negatively affected by ongoing demonetisation in the country according to purchasing managers' assessments. This was also reflected in growth in unemployment in December. India is expected to be the world's fastest growing large economy again this year. The unexpected cancellation of high-denomination banknotes caused the EIU and the World Bank to cut their outlooks for the current fiscal year (ending in March 2017) and the next, but from the long-term perspective it should have a positive effect on the Indian economy. Inflation dropped further to 3.4% in December, with food price growth slowing further. According to the CF and EIU forecasts, inflation will fluctuate around 5% this year and the next.



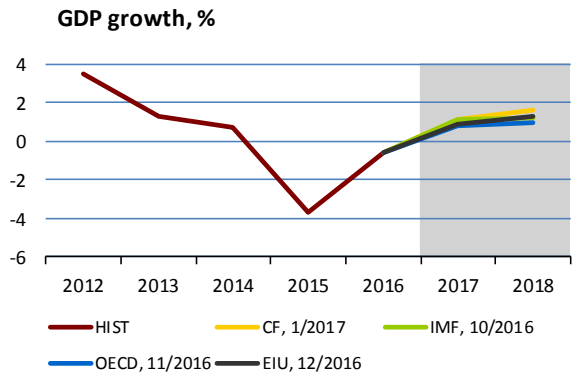
	CF	IMF	OECD	EIU
2017	7.5	7.6	7.6	7.0
2018		7.7	7.7	8.0



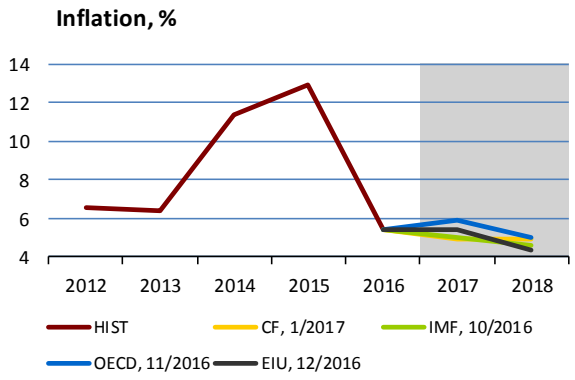
	CF	IMF	OECD	EIU
2017	5.0	5.2	5.2	5.1
2018		5.3	4.6	

III.3 Russia

CF expects Russian GDP to have dropped in 2016 (by 0.6%), but less dramatically than in 2015, when it declined by 3.5%. This year, the economy is expected to start growing again. The latest short-term and leading indicators mostly support this hypothesis. Output in industry and in its manufacturing segment rose by 2.7% and 2.5% year on year respectively in November. The real wage increased by 1.7% compared to November 2015. Bolstered by the favourable developments, the Markit PMI continued to rise in December in both manufacturing (to 53.7) and services (to 56.6), where it recorded the fastest growth in four years. The Russian rouble has appreciated to around RUB 60 against the dollar in recent weeks on the back of growth in oil prices (stemming from the agreement among OPEC countries to limit output). CF and the EIU expect GDP to grow by 0.9%–1.1% this year; inflation is forecasted at 4.9%–5.4% as of December.



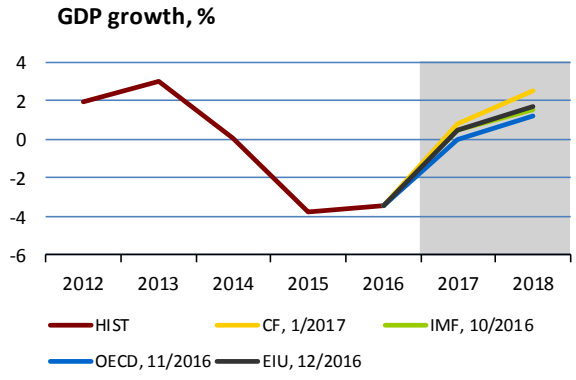
	CF	IMF	OECD	EIU
2017	1.1	1.1	0.8	0.9
2018	1.6	1.2	1.0	1.3



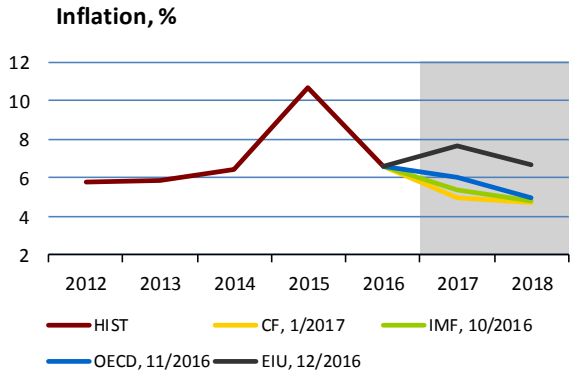
	CF	IMF	OECD	EIU
2017	4.9	5.0	5.9	5.4
2018	4.9	4.6	5.0	4.4

III.4 Brazil

The decline in Brazilian GDP in 2016 was probably only slightly slower than in 2015, reaching 3.4% for the year as a whole according to CF. This year, the economic situation is expected to improve and, like in Russia, growth will turn positive again. CF and the EIU estimate GDP growth at 0.5%–0.8% this year. Next year, they expect it to accelerate to 1.7%–2.5%. The board of the Brazilian central bank (Copom) voted unanimously to lower the SELIC rate by 0.75 pp to 13.0% in early January in response to the persisting recession. The reduction was sharper than initially expected (0.50 pp, Reuters). The aggressive rate cut is aimed at stimulating a recovery of the economy. At the same time, the central bank reduced its inflation outlook for this year to 4.0%, i.e. 0.5 pp below the inflation target. It expects a further cut to 3.4% in 2018. The latest CF and EIU outlooks currently foresee higher inflation: 5.0%–7.7% in 2017 and 4.7%–6.7% next year.



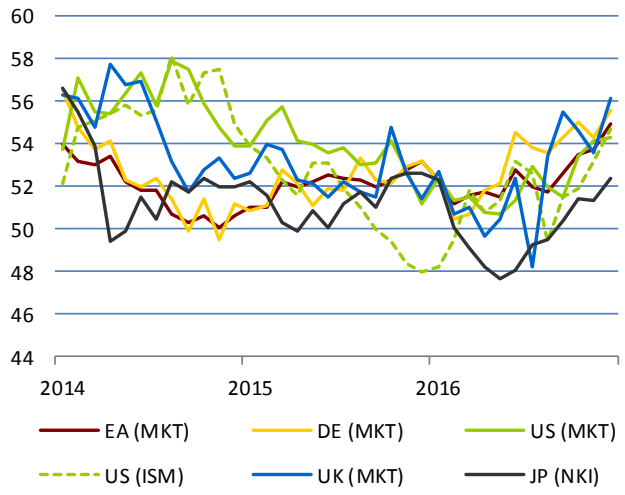
	CF	IMF	OECD	EIU
2017	0.8	0.5	0.0	0.5
2018	2.5	1.5	1.2	1.7



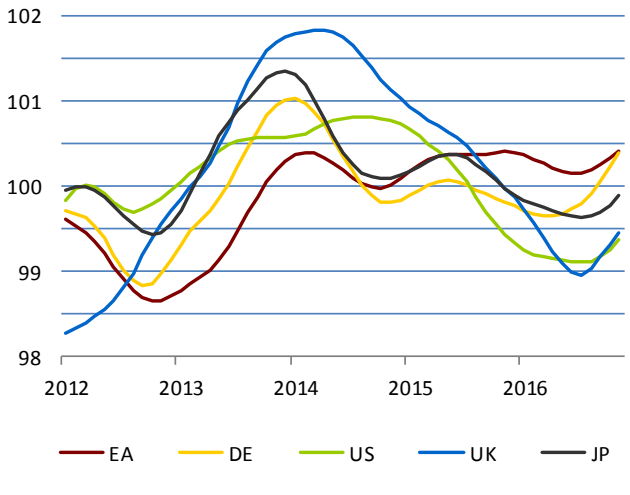
	CF	IMF	OECD	EIU
2017	5.0	5.4	6.0	7.7
2018	4.7	4.8	5.0	6.7

IV.1 Advanced economies

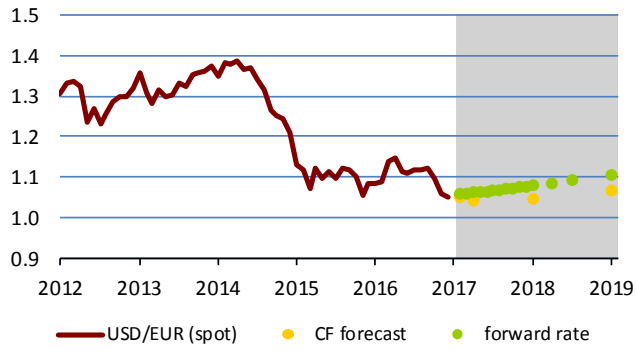
PMI in manufacturing



OECD-CLI

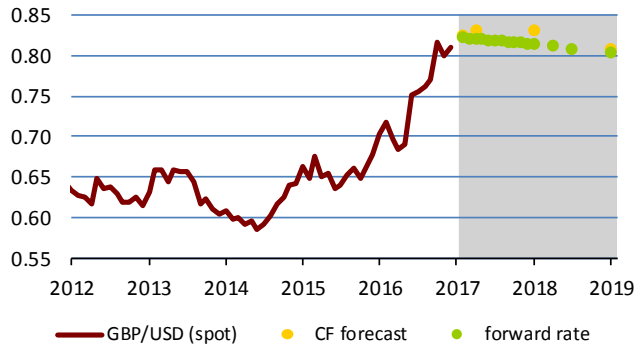


The US dollar (USD/EUR)



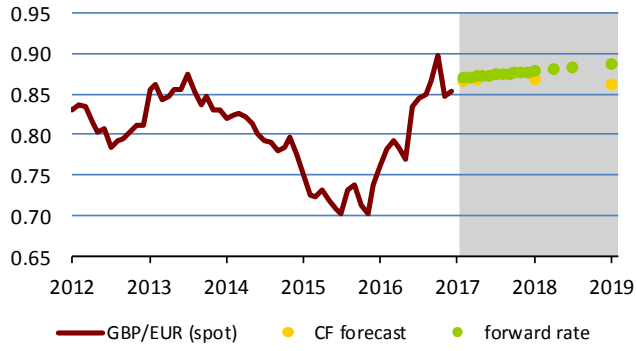
	9/1/17	02/17	04/17	01/18	01/19
spot rate	1.056				
CF forecast		1.049	1.043	1.045	1.067
forward rate		1.059	1.062	1.079	1.105

The British pound (GBP/USD)



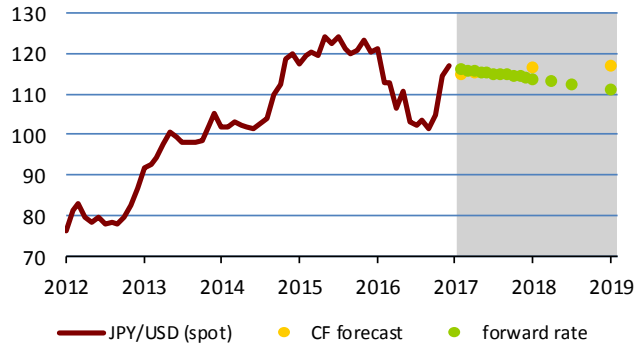
	9/1/17	02/17	04/17	01/18	01/19
spot rate	0.823				
CF forecast		0.824	0.831	0.831	0.807
forward rate		0.822	0.820	0.814	0.803

The British pound (GBP/EUR)



	9/1/17	02/17	04/17	01/18	01/19
spot rate	0.869				
CF forecast		0.865	0.867	0.869	0.861
forward rate		0.870	0.871	0.878	0.887

The Japanese yen (JPY/USD)

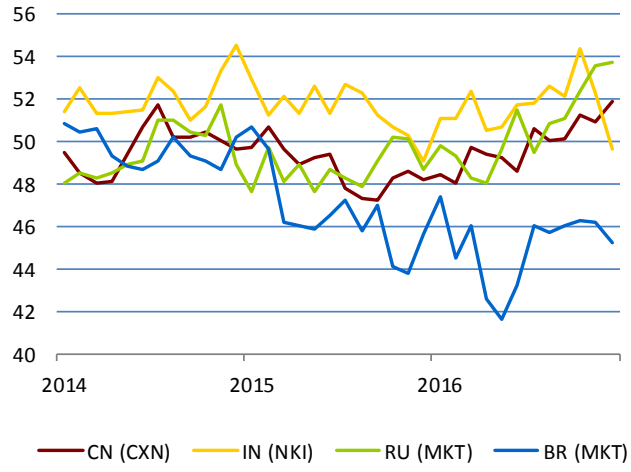


	9/1/17	02/17	04/17	01/18	01/19
spot rate	116.5				
CF forecast		114.9	115.4	116.6	116.9
forward rate		115.9	115.5	113.8	110.9

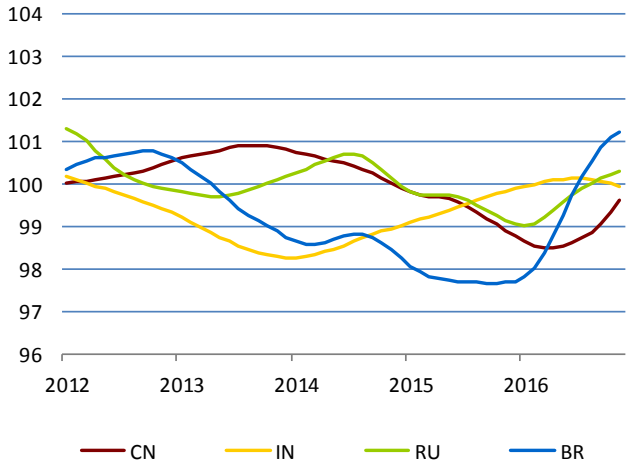
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.2 BRIC countries

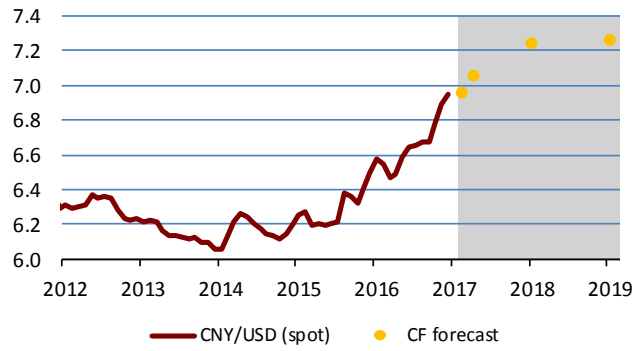
PMI in manufacturing



OECD-CLI

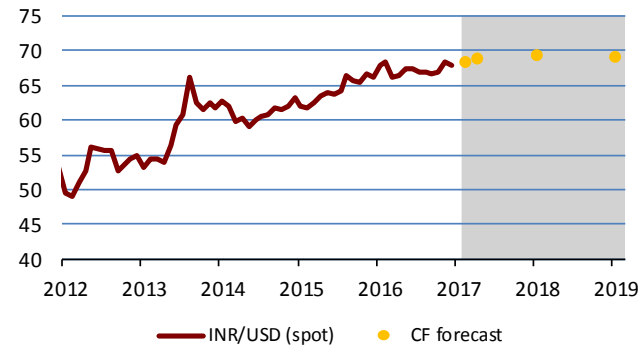


The Chinese renminbi (CNY/USD)



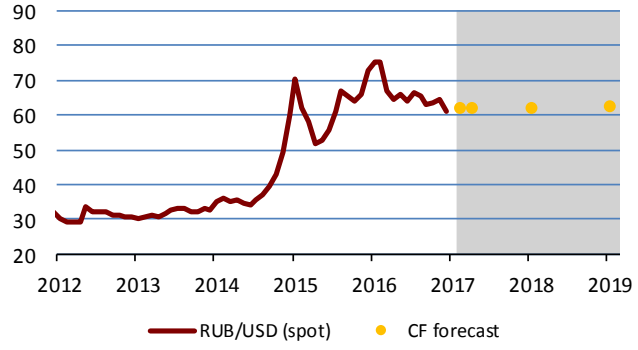
	9/1/17	02/17	04/17	01/18	01/19
spot rate	6.935				
CF forecast		6.955	7.056	7.244	7.263

The Indian rupie (INR/USD)



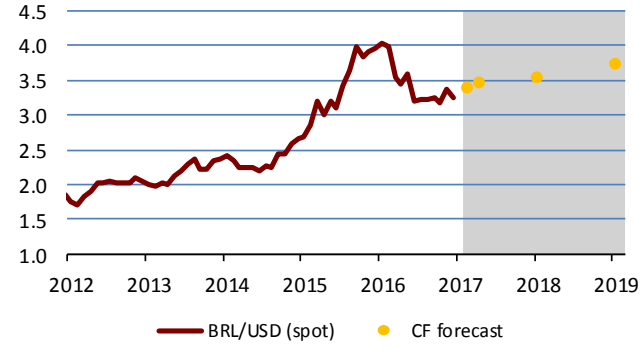
	9/1/17	02/17	04/17	01/18	01/19
spot rate	68.23				
CF forecast		68.47	68.81	69.25	69.07

The Russian rouble (RUB/USD)



	9/1/17	02/17	04/17	01/18	01/19
spot rate	60.06				
CF forecast		62.03	62.12	62.2	62.74

The Brazilian real (BRL/USD)



	9/1/17	02/17	04/17	01/18	01/19
spot rate	3.197				
CF forecast		3.385	3.474	3.538	3.732

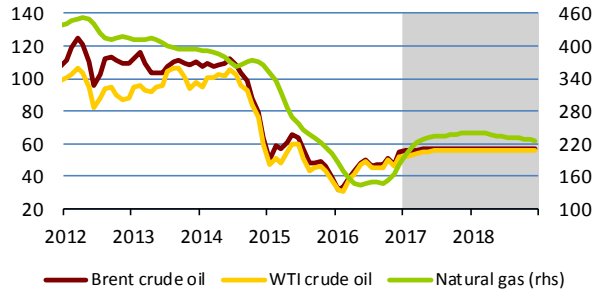
Note: Exchange rates as of last day of month.

V.1 Oil and natural gas

The oil price rose sharply in late November and early December after OPEC representatives agreed to cut oil output by 1.2 million barrels a day. The measure will be effective from January 2017 and will be in place for at least six months. The moderate upward price trend continued throughout December, when other large non-OPEC oil producers decided at a subsequent meeting to cut output (by 558,000 barrels a day) and some OPEC suppliers tried to boost the credibility of the agreements by notifying their regular customers of the planned reduction in supplies. The average Brent crude oil price thus reached USD 54.9/bbl in December, exceeding 50 dollars for the first time since July 2015. In the first half of January, the Brent price fluctuated mostly in the range of USD 55–57/bbl. The market is awaiting data on current output, which will reveal the extent to which individual oil producers are willing to keep their promises.

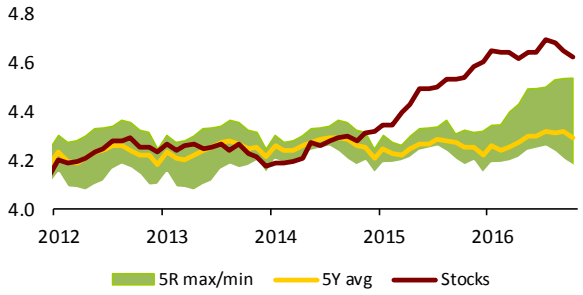
The market futures curve recorded virtually no shift compared to the previous month and flattened out even further. It is slightly rising until around mid-2017 and is then almost horizontal. This suggests that expected oil supply and demand might have balanced out by then. The Brent oil price should thus average around USD 57/bbl this year and the next. The January CF expects a similar price (USD 56.1/bbl at the one-year horizon). The latest EIA forecast expects lower average prices (USD 53/bbl and USD 56/bbl for this year and the next respectively), as global oil stocks should still rise on average this year (by 0.3 million barrels a day) and not be drawn on until mid-2018. The oil price is expected to respond by surging to USD 59/bbl at the end of 2018.

Outlook for prices of oil (USD/barrel) and natural gas (USD / 1000 m³)

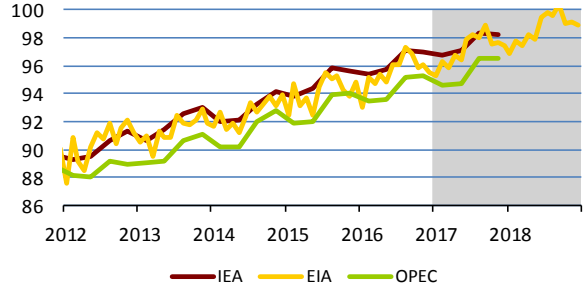


	Brent	WTI	Natural gas
2017	56.68	55.03	228.91
2018	56.84	56.07	233.20

Total stocks of oil and oil products in OECD (bil. barrel)

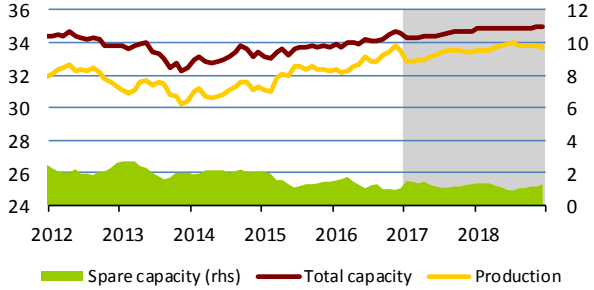


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2017	97.61	97.20	95.58
2018		98.71	

Production, total and spare capacity in OPEC countries (mil. barrel / day)



	Production	Total capacity	Spare capacity
2017	33.22	34.49	1.26
2018	33.73	34.89	1.16

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

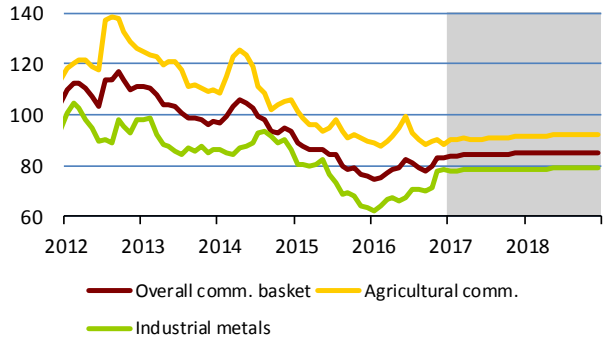
Note: Oil price at ICE, price of Russian natural gas at German border – IMF data, smoothed by the HP filter. Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic) in OECD countries – IEA estimate.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

V.2 Other commodities

The average monthly non-energy commodity price index rose for the third consecutive month in December and kept rising in early January. However, its components showed mixed trends. The basic metals price index moved higher again in December following strong growth in November, but had weakened modestly by mid-January. Despite this, it remains close to an 18-month high. By contrast, the food commodity price index dropped slightly in December, but returned to the November level in early January. This index, however, is close to its lowest levels since 2010. All three indices are virtually flat over the outlook horizon.

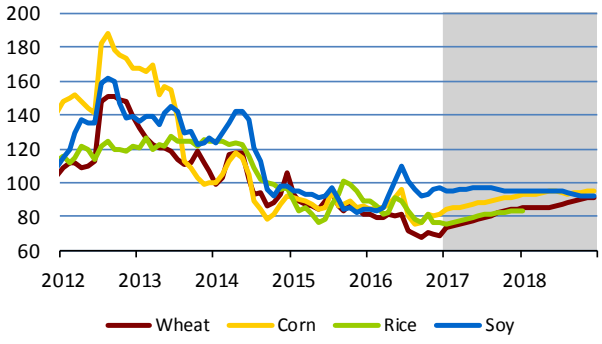
Prices of most basic metals followed the same pattern as their index. This means that, following strong growth in November, they recorded a modest correction in the second half of December (due, among other things, to the strong dollar) and are expected to be flat over the outlook horizon. The exception is iron ore, which is expected to fall in price. The price of rubber was flat following strong growth in November. On the other hand, food commodity prices continued to be very mixed. Wheat and corn prices rose slightly and are expected to grow over the outlook horizon as well. Rice and soy prices moved in the opposite direction and their outlook is slightly falling. The price of sugar partly reversed its November fall and has been rising since mid-December. Cocoa prices hit their lowest levels in more than three years due to a strong six-month-long decline. The price of pork increased in line with the usual seasonal pattern and is expected to continue rising throughout the first half of the year. The price of beef also went up, but is expected to return to lower levels in the first half of 2017.

Non-energy commodities price indicies



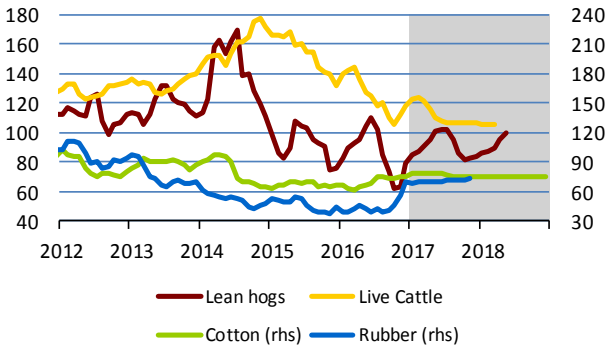
	Overall	Agricultural	Industrial
2017	84.3	90.9	78.5
2018	85.1	92.0	78.9

Food commodities



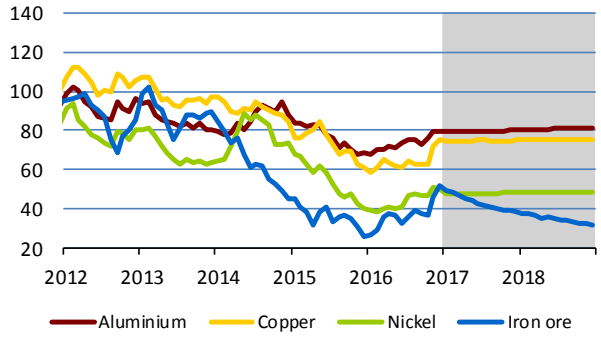
	Wheat	Corn	Rice	Soy
2017	79.2	88.2	80.2	96.1
2018	87.7	94.1	83.1	94.0

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2017	91.3	111.7	77.0	71.0
2018	91.7	105.5	75.2	

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2017	79.5	74.7	47.8	43.1
2018	80.8	75.0	48.5	34.7

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 phenomenon of equilibrium real interest rates – is their fall temporary or permanent?[1]

This article summarises the views on one of the most discussed economic phenomena of the day – the global decline in real interest rates. The study of this issue has been given a new impetus by the latest Jackson Hole symposium of leading central bankers and academics and by a working paper written by Holston, Laubach and Williams (2016). The first theory discussed here attributes the phenomenon of low interest rates to structural changes (i.e. population ageing and slower trend GDP growth) and fears long-term secular stagnation. The significance of structural factors is supported by numerous empirical estimates of the equilibrium real rate. The second approach views this phenomenon as a temporary cyclical swing linked primarily with financial cycles. Given their different opinions about the permanence of the drop in equilibrium real interest rates, the two views thus differ in their monetary policy recommendations.

1 A 50-year history of real interest rates

A downward trend in nominal interest rates has been observed in most advanced economies since about the mid-1980s. Some of the decline in nominal rates between the early 1990s and the end of the millennium can be explained by falling inflation expectations as countries switching to inflation targeting gradually succeeded in anchoring those expectations around inflation targets. However, real interest rates were falling significantly at the time as well.[2] Since 2000, inflation expectations have been mostly steadily anchored, so the decline in nominal rates stems almost entirely from falling real interest rates.

The downward trend in real interest rates is apparent for both short-term and long-term interest rates, as illustrated by Charts 1 and 2 for selected advanced economies. This drop has a wide range (of up to 1,000 basis points). Back in the 1980s, average real rates in the USA, Canada and Australia were around 6%–8% (the annual averages in Australia were as high as 10%). At present, they are mostly zero in all five selected territories. Negative real rates are no exception even at the longer end of yield curves.

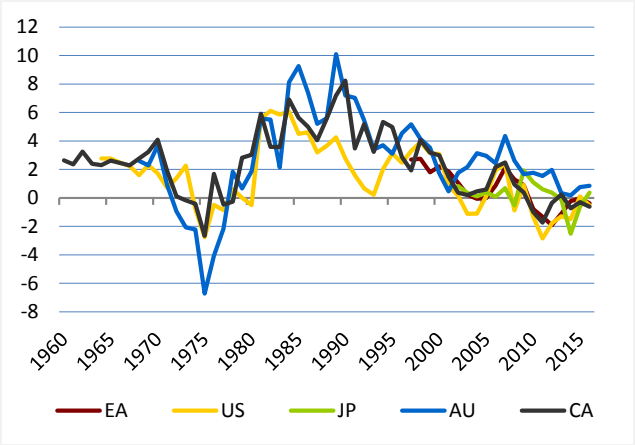


Chart 1 Short-term real interest rates

Source: OECD

Note: Annual averages of three-month money market interest rates less the annual inflation rate, in %; EA – euro area, US – United States, JP – Japan, AU – Australia, CA – Canada

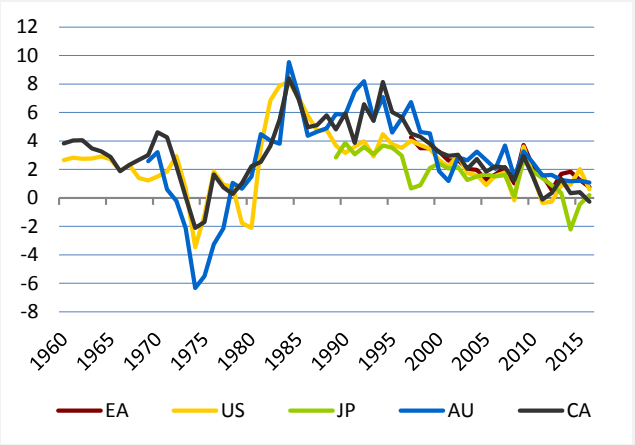


Chart 2 Long-term real interest rates

Source: OECD

Note: Annual averages of ten-year government bond yields less the annual inflation rate, in %; EA – euro area, US – United States, JP – Japan, AU – Australia, CA – Canada

However, the phenomenon of declining real interest rates is not limited to advanced countries, as demonstrated, for example, by Bank of England (2015) in the case of real yields on ten-year government bonds of selected emerging market economies.[3] The fall in real rates is thus due not only to domestic fundamentals in individual economies, but also to global changes affecting all countries simultaneously. The question of which factors are driving the decline in rates is the subject of an intense debate among economists. This debate was given a new impetus at last year's Jackson Hole symposium of leading central bankers and academics. Two theories have crystallised in the debate so far. The first attributes the

[1] Authors: Soňa Benecká, Pavla Břízová and Luboš Komárek. The views expressed in this article are those of the authors and do not necessarily reflect the official position of the Czech National Bank.

[2] Simply put, the real interest rate (r) is defined either as "ex ante" ($r = i - \pi^e$) or as "ex post" ($r = i - \pi$), where (i) represents the nominal interest rate and (π^e) the expected and (π) the real inflation rate. The real interest rate can alternatively be expressed by the relation $r = i_s + MP - \pi^e = i_s + (\varepsilon + \lambda + \sigma) - \pi^e$, where ($i_s$) is the short-term nominal interest rate and MP represents the maturity premium, consisting of (ε) a short-term interest rate expectations factor, (λ) a liquidity premium and (σ) a general risk premium.

[3] The BRICS countries (Brazil, Russia, India, China and South Africa), Chile, Columbia, the Czech Republic, Hungary, Malaysia, Mexico, Poland, Singapore, Slovakia, South Korea, Taiwan and Thailand.

phenomenon of low interest rates to structural changes and fears long-term secular stagnation, while the second views the phenomenon as a temporary cyclical swing. Although these two theories are presented as rivals, each "camp" seems to contribute something to explaining the falling rates. Given their different predictions of future developments, though, they differ in their monetary policy recommendations.

2 Structural factors

The structural reasons for the decline in real rates draw on the debate about secular stagnation (see Hansen, 1939). This hypothesis was revived by Larry Summers (2014), who describes a situation where an excess of savings over investment generates a permanent drop in demand and hence also persistently low economic growth and inflation. This, in turn, results in persistently low real interest rates. The subsequent debate has focused on whether and why savings and investment are imbalanced. The literature evaluates the effect of supply factors (e.g. ageing) and demand factors (e.g. demand for safe assets). These factors include:

- Population ageing, labour market hysteresis, changes in labour force quality
- Slower technological progress and less innovation, falling productivity
- Falling relative prices of capital goods
- Shortages of safe assets in emerging economies (a savings glut)
- Growth in inequality (wealth, income)

One of the most cited reasons for the drop in real rates is slower trend GDP growth. Slowing technological progress and population growth in particular can be reflected in lower capital yields and hence also in lower demand for capital, ultimately leading to a drop in real interest rates. Chart 3 shows the average growth in total factor productivity in selected advanced economies in five-year periods, again since 1960. All the countries recorded a significant drop in year-on-year growth at the end of the period under review. The productivity level should primarily reflect structural growth factors such as technological progress. However, a whole range of statistics, including those on patents, indicate no slowdown in technological growth. The share of R&D spending in GDP has increased in most advanced economies, but the speed of human capital accumulation has slowed – growth in the average education level of the population has decreased considerably over the past 60 years. Changes in the requirements for labour force quality and flexibility should not be ignored either. Higher income inequality can also create natural barriers to progress, while the room for fiscal stimulus measures has been exhausted in many economies.

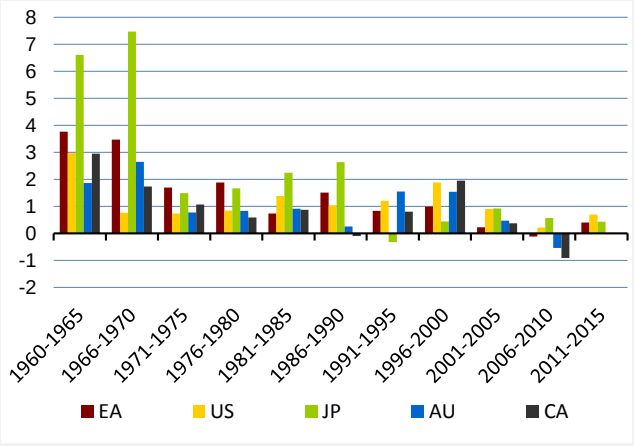


Chart 3 Total factor productivity

Source: AMECO

Note: Year-on-year growth, in %; EA – euro area, US – United States , JP – Japan, AU – Australia, CA – Canada

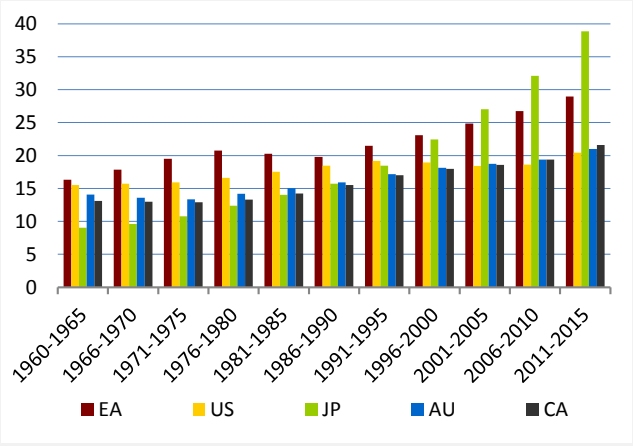


Chart 4 Population ageing

Source: World Bank

Note: Ratio of the population aged 65 years or over to the working-age population (15–64 years), in %; EA – euro area, US – United States, JP – Japan, AU – Australia, CA – Canada

Furthermore, we should not overlook demographics, especially in advanced economies. As Chart 4 illustrates, the population in these countries has aged significantly. In Japan, for example, the ratio of the population aged 65 or over has risen from less than 10% in the early 1960s to more than 40% at present. Population ageing affects trend growth not only via labour supply. It also directly influences total factor productivity – from labour force flexibility to the supply of innovation.

Demographic factors are also reflected in the saving rate. Population ageing is increasing the saving rate, particularly in countries lacking a pension system. This is especially true of emerging economies (such as China), where, however, domestic consumption is expected to soar in the coming years. Likewise, income inequality also raises savings, as richer people are more willing to save. Last but not least, many emerging economies have accumulated significant forex reserves in the last two decades, either to support domestic exporters or as a precautionary buffer against excessive exchange rate movements.

Box 1. Equilibrium real interest rates

According to economic theory, nominal interest rates should, net of long-term inflation expectations, converge in the long run towards their real equilibrium level (the natural rate of interest, NRI). The NRI concept has a long tradition (see Wicksell, 1898) and hence also various different definitions. In this box we will discuss the approach of Laubach and Williams (2003, 2015), which focuses on finding the real interest rate consistent with stable inflation and output being at its potential level after transitory demand and supply shocks have faded away.

The following table shows NRI estimates using the Kalman filter for four advanced economies from Holston, Laubach and Williams (2016). As is evident, the NRI has been falling sharply in all the economies under review over the past 25 years. In the case of the euro area, it is even negative.

	1990	2007	2016
United States	3.5	2.3	0.4
Canada	3.2	2.5	1.3
Euro area	2.5	2.1	-0.3
United Kingdom	2.9	2.6	1.5

The above study confirmed the dominant effect of declining trend growth and hence the effect of structural factors. It also found that rates have a tendency to co-move across countries. Global factors thus play a crucial role in their movements. Moreover, none of the countries under review saw a reversal of the observed trend.

Using the same method, Fries at al. (2016) estimated NRIs for major euro area economies. Their results showed that rates differ across countries and that their dispersion increased during the euro area sovereign debt crisis.

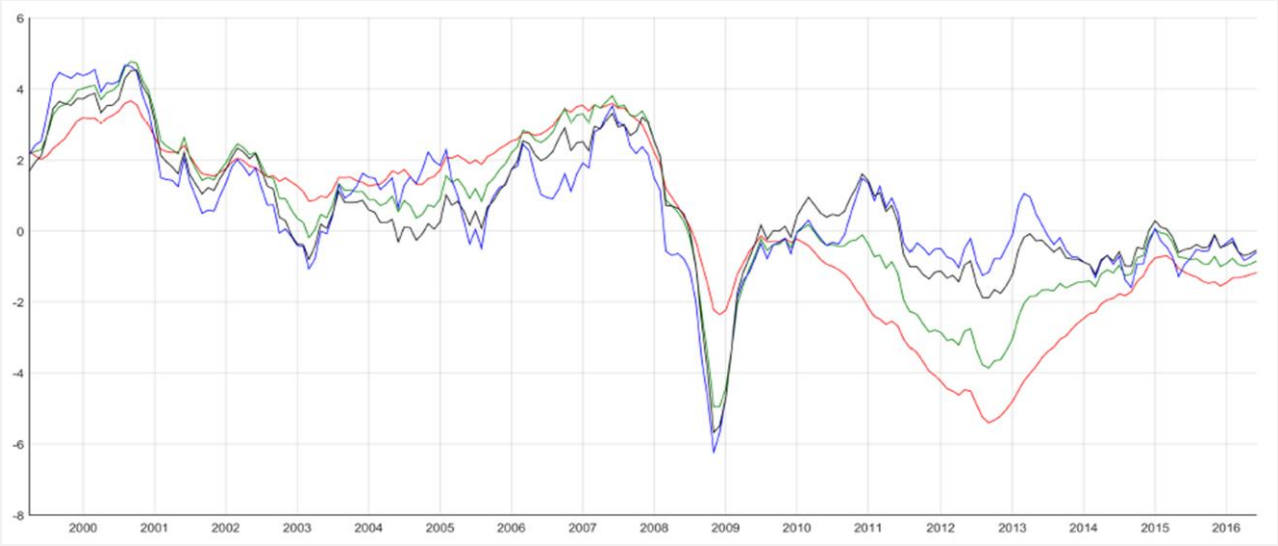


Chart 5 NRIs for selected euro area countries

Source: Fries at al. (2016)

Note: Germany – black, France – blue, Italy – green, Spain – red

However, the investment side has also recorded changes, so investment-savings ratios are unchanged. The price of capital has fallen sharply, so investment is now 30% cheaper than in the 1980s (see Chart 6). There is an ongoing debate on how to capture growth in quality (e.g. faster computers) when prices are relatively stable.

Bank of England (2015) even provides estimates of the effects that individual secular factors have on global real interest rates. Chart 7 shows the contributions to the change in global real interest rates. Between 1980 and 2015, the biggest negative contributors were potential growth and demographics, followed by the relative price of capital. However, as our article suggests, the individual factors reinforce each other, a fact that the above empirical analysis does not take into account.

A number of other economists (Paul Krugman, Ben Bernanke and others) have tried to offer alternative explanations of the observed data (e.g. globalisation). The possibility that new technologies fundamentally change the structure of the economy and that classical indicators (such as GDP) are unable to capture those changes has also been debated. They are reflected in changes in the labour market (demand for highly qualified experts), difficulty in finding attractive investments and growing inequality (winner takes all). Firms have high value but low capital intensity. Management innovations are also leading to a preference for shorter investment horizons, production relocation and dynamic inventory management (short termism).

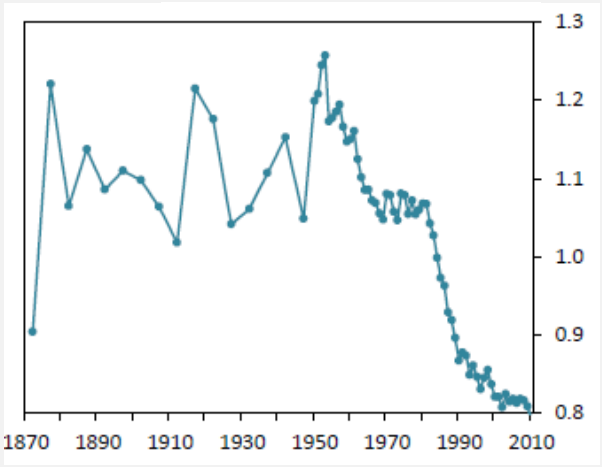


Chart 6 Relative price of capital goods

Source: Bank of England (2015)

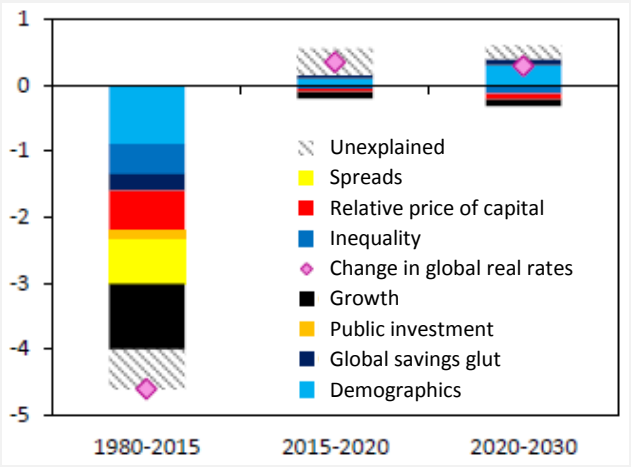


Chart 7 Contributions to change in the global real interest rate

Source: Bank of England (2015)
Note: In pp

3 Cyclical factors

The cyclical reasons for the drop in real interest rates are based on the well-known nature of the economic cycle and also on the nature of the financial cycle (or "debt supercycle"), which we focus on here. Both these cycles change economic agents' motivation to invest and save (and hence consume), and that can be reflected in the real interest rate cycle.[4]

The financial cycle is caused by the fact that financial risks and future imbalances emerge in good economic times associated with overly optimistic expectations. The theoretical basis of the financial cycle can be found in Kaldor's economic cycle model.[5] Its phases, which can be described in simplified terms[6] using the rise and fall of economic agents' assets relative to the debt incurred in purchasing them (leveraging), consist of:

I. Upward phase: leveraging process, accumulation of excessive debt
II. Peak of the cycle
III. Downward phase: deleveraging process, growth in aggregate savings
IV. Trough of the cycle

The expansionary phase of the financial cycle is associated with high or excessive credit growth stemming from economic agents' over-optimism. This phase is characterised by the accumulation of risks which, for various reasons, will not manifest until later on. As soon as it becomes known that debtors' ability to repay their debts is not as good as expected, the financial cycle peaks and enters the restrictive phase. In this phase, the share of non-performing loans rises and the financial (banking) sector records high losses, which can ultimately limit banks' ability to lend or, worse, trigger a financial crisis.[7] This is followed by a deleveraging process and concurrent growth in aggregate savings. With limited funds at their disposal, agents then reassess their general risk perceptions and level of risk taking. The deleveraging process is relatively long, so interest rates stay low for quite some time. However, from the perspective of the financial cycle, the drop in real rates is only temporary, unlike in the secular stagnation hypothesis, which assumes a permanent decrease in real rates.

A rough approximation of the financial cycle can be obtained using the measure of the loan stock relative to nominal GDP, either as a percentage (see Chart 8) or as a deviation from the trend (see Chart 9). The charts show the peaks of the financial cycle defined in this way in the early 1990s and in the period preceding the collapse of Lehman Brothers in the mid-2000s. Japan shows a different pattern to the other countries in this period. This reflects the efforts of the Japanese authorities (the central bank and government) to lift the economy out of a long period of economic stagnation. The troughs of the financial cycle (except for the 1990s) correspond quite well with the periods of negative real interest rates around 1975 and very low rates in recent years (see Charts 1 and 2).

[4] See, for example, Cochrane (2016).

[5] Nicholas Kaldor (1940) was the first to derive an endogenous economic cycle, i.e. a simple non-linear dynamic system modelling the relationship between savings and investment in the economy.

[6] The financial cycle is usually described merely as a latent (not directly measurable) process that cannot be identified with a single, specific observable variable.

[7] See, for example, Frait and Komárková (2012).

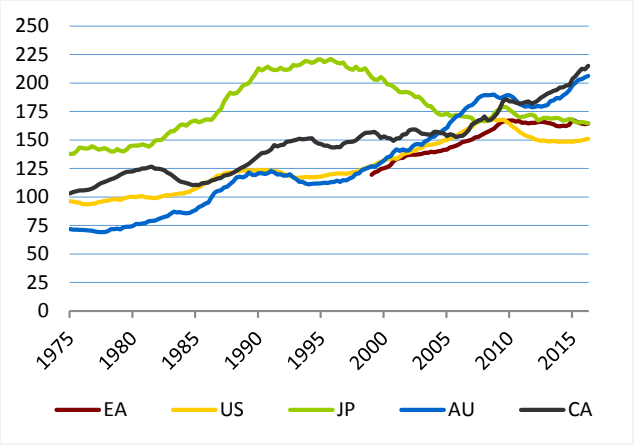


Chart 8 Credit to non-financial corporations as a percentage of nominal GDP

Source: BIS

Note: In %; EA – euro area, US – United States , JP – Japan, AU – Australia, CA – Canada

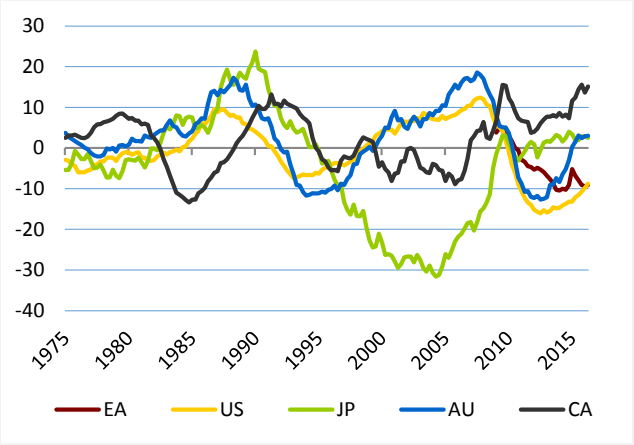


Chart 9 Non-financial sector credit gap

Source: BIS

Note: Difference between credit provided to non-financial corporations and nominal GDP compared with the trend, in %; EA – euro area, US – United States, JP – Japan, AU – Australia, CA – Canada

4 In lieu of a conclusion: Monetary policy recommendations

The theories described above tend to be presented as rivals. Various analyses have been deployed in an attempt to prove that one is right while the other is wrong. However, we recommend regarding them more as complementary approaches, each contributing something to the overall explanation of economic reality. Given their different opinions on the permanence of the decline in real interest rates, though, they differ in their monetary policy recommendations.

From the structural perspective, which views the decline in the equilibrium real interest rate as more permanent and fears long-term secular stagnation, several ways of fostering higher[8] real interest rates can be offered. The first, as argued by Yellen (2016), is to treat the current unconventional tools and policies as conventional ones. The second – see Blanchard, Mauro and Dell'Ariccia (2010) and Williams (2016) – is to increase central banks' inflation targets. Related to this is the recommendation of other authors to switch from explicit inflation targets to price-level or nominal GDP targeting (see, for example, Eggertsson and Woodford, 2003, Vestin, 2006, and Ambler, 2009). The third type of solution is the recommendation of Rogoff (2016) to eliminate the zero lower bound on interest rates by switching to a cashless economy.

The proponents of the cyclical view regard the observed drop in real interest rates as temporary and originating in the swings of the economic and financial cycles. They therefore recommend asset purchases (quantitative and qualitative easing) or new, untested alternatives, such as "helicopter money" as presented first by Friedman (1969) and in new applications by, for example, Bernanke (2016) and Buiter (2016). Other recommendations include announcing future interest rate increases (forward guidance[9]), moving policy rates into negative territory and implementing yield curve control (see Fed, 2003, and Bank of Japan, 2016).

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[8] However, Cochrane (2015), for example, says that low inflation and hence low interest rates may not in fact bother economies, casting doubt on the desirability of quantitative easing by central banks.

[9] For a description and recent examples of the "Delphic" and "Odyssean" forms of forward guidance, see Komárek and Klíma (2014).

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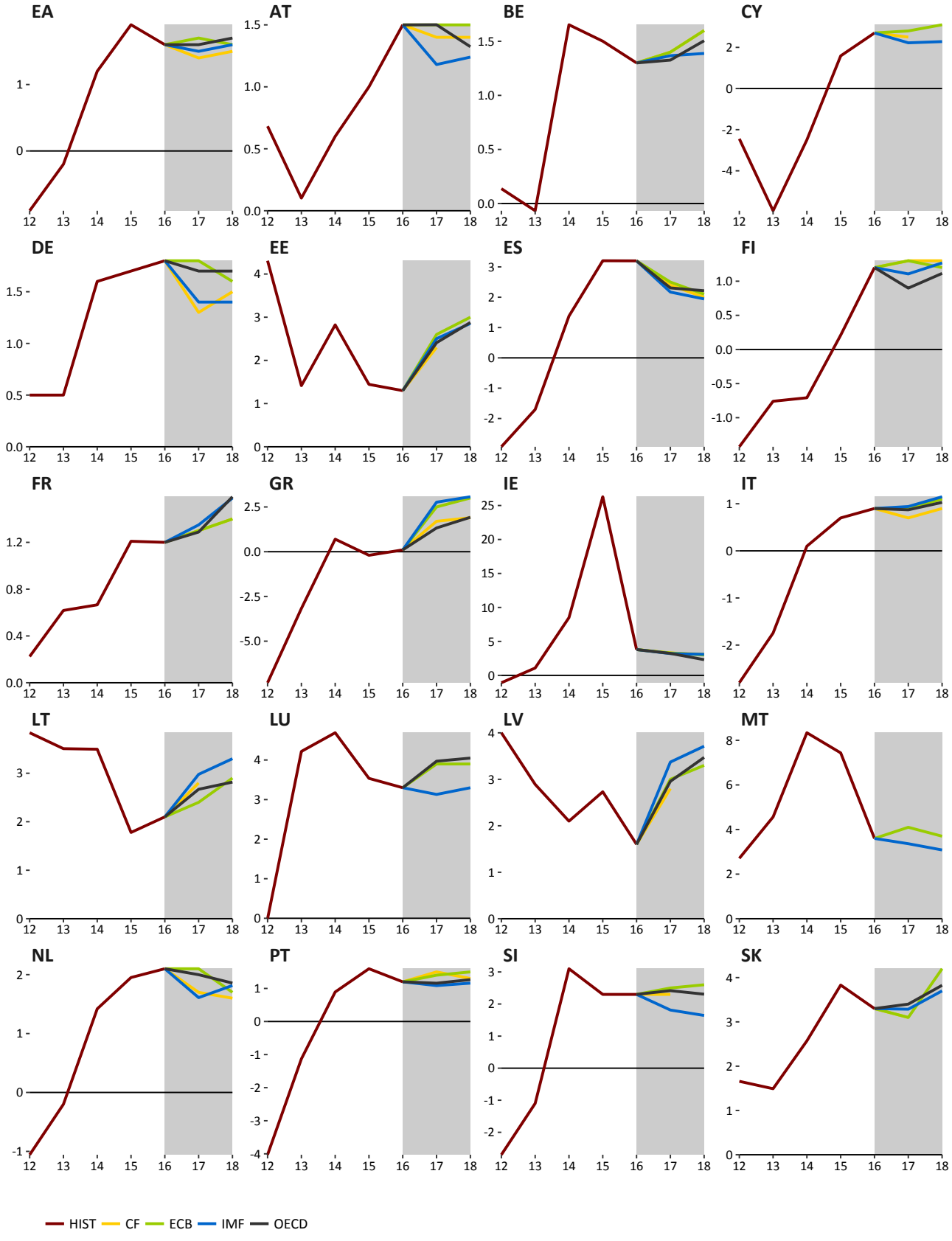
A1. Change in GDP predictions for 2017

	CF		IMF		OECD		CB / EIU	
EA	0	2017/1 2016/12	+0.1	2016/10 2016/7	+0.2	2016/11 2016/9	+0.1	2016/12 2016/9
DE	0	2017/1 2016/12	+0.2	2016/10 2016/7	+0.2	2016/11 2016/9	+0.2	2016/12 2016/6
US	0	2017/1 2016/12	-0.3	2016/10 2016/7	+0.2	2016/11 2016/9	+0.1	2016/12 2016/9
UK	+0.1	2017/1 2016/12	-1.1	2016/10 2016/4	-0.8	2016/11 2016/6	+0.6	2016/11 2016/8
JP	+0.1	2017/1 2016/12	+0.5	2016/10 2016/7	+0.3	2016/11 2016/9	0	2016/11 2016/7
CN	0	2017/1 2016/12	0	2016/10 2016/7	+0.2	2016/11 2016/9	0	2016/12 2016/12
IN	0	2017/1 2016/12	+0.2	2016/10 2016/7	+0.1	2016/11 2016/9	-0.3	2016/12 2016/12
RU	-0.1	2016/12 2016/11	+0.1	2016/10 2016/7	+0.3	2016/11 2016/6	+0.1	2016/12 2016/12
BR	-0.4	2016/12 2016/11	0	2016/10 2016/7	+0.3	2016/11 2016/9	-0.5	2016/12 2016/12

A2. Change in inflation predictions for 2017

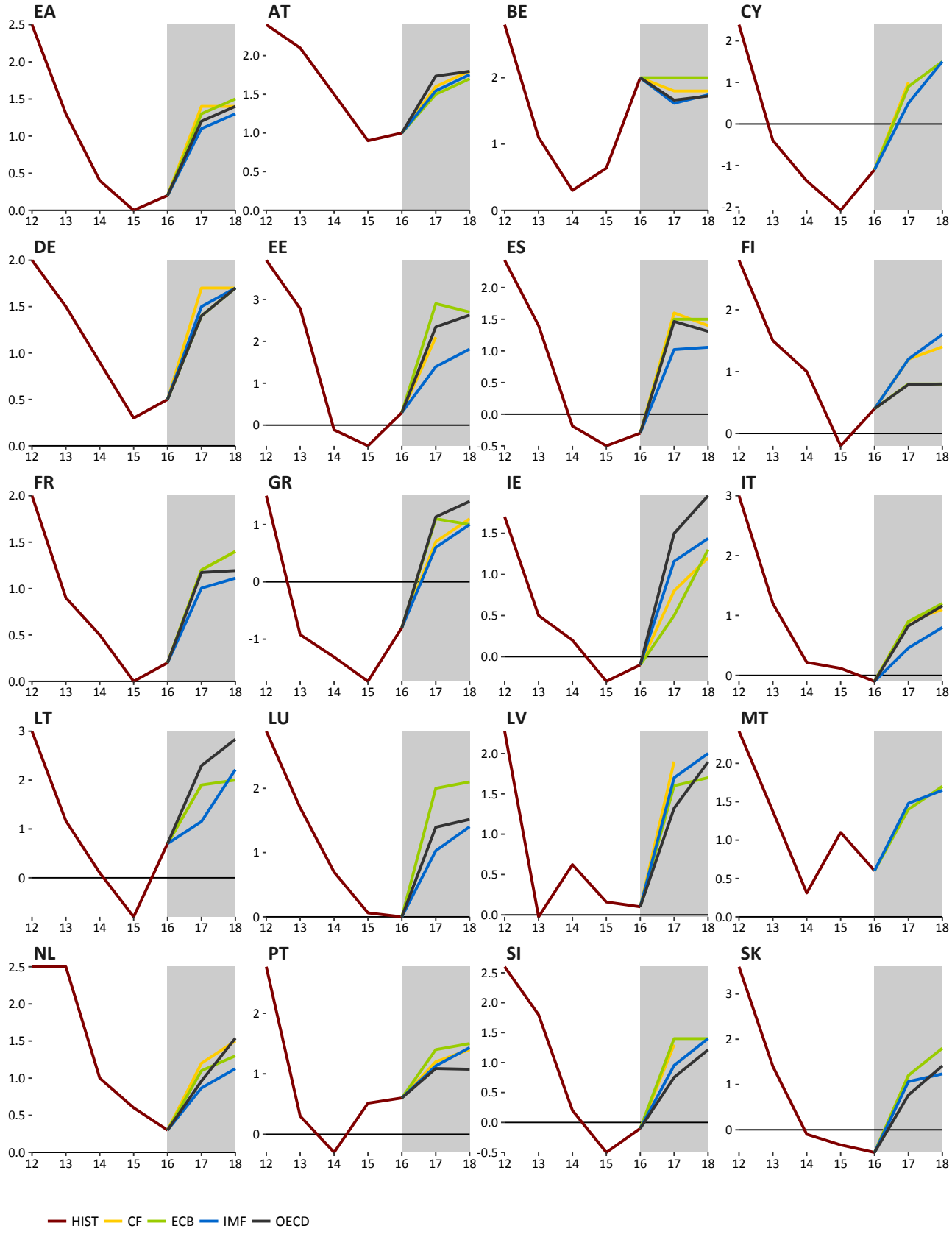
	CF		IMF		OECD		CB / EIU	
EA	+0.1	2017/1 2016/12	0	2016/10 2016/4	0	2016/11 2016/6	+0.1	2016/12 2016/9
DE	+0.2	2017/1 2016/12	+0.1	2016/10 2016/4	-0.1	2016/11 2016/6	-0.1	2016/12 2016/6
US	0	2017/1 2016/12	+0.8	2016/10 2016/4	-0.1	2016/11 2016/6	0	2016/12 2016/9
UK	0	2017/1 2016/12	+0.6	2016/10 2016/4	+0.8	2016/11 2016/6	+0.7	2016/11 2016/8
JP	+0.1	2017/1 2016/12	-0.7	2016/10 2016/4	-1.8	2016/11 2016/6	-0.2	2016/11 2016/7
CN	+0.1	2017/1 2016/12	+0.3	2016/10 2016/4	-0.8	2016/11 2016/6	0	2016/12 2016/12
IN	0	2017/1 2016/12	-0.1	2016/10 2016/4	+0.6	2016/11 2016/6	+0.1	2016/12 2016/12
RU	-0.2	2016/12 2016/11	-1.5	2016/10 2016/4	+0.6	2016/11 2016/6	0	2016/12 2016/12
BR	-0.1	2016/12 2016/11	-0.7	2016/10 2016/4	+0.3	2016/11 2016/6	+0.5	2016/12 2016/12

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