GLOBAL ECONOMIC OUTLOOK - JULY

2018

Monetary Department
External Economic Relations Division

CNB CZECH NATIONAL BANK

Cut-off date for data
13 July 2018

CF survey date
9 July 2018

GEO publication date
20 July 2018

Notes to charts
ECB and Fed: midpoint of the range of forecasts.
The arrows in the GDP and inflation outlooks indicate the direction of revisions compared to the last GEO. If no arrow is shown, no new forecast is available. Asterisks indicate first published forecasts for given year. Historical data are taken from CF, with exception of MT and LU, for which they come from EIU.
Leading indicators are taken from Bloomberg and Datastream.
Forecasts for EURIBOR and LIBOR rates are based on implied rates from interbank market yield curve (FRA rates are used from 4M to 15M and adjusted IRS rates for longer horizons). Forecasts for German and US government bond yields (10Y Bund and 10Y Treasury) are taken from CF.

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I. SUMMARY

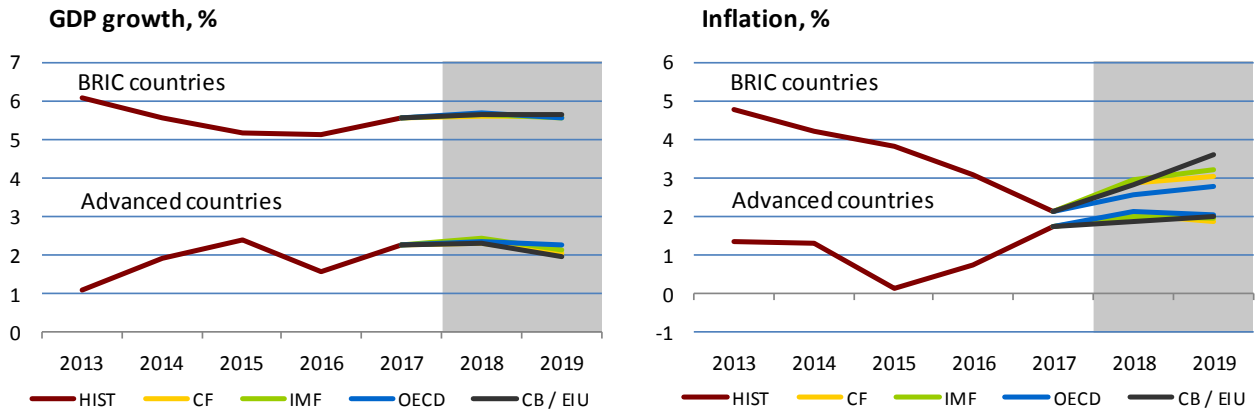
The first issue of Global Economic Outlook during this year's summer holidays presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. The analytical section of this issue focuses on the cryptoassets market, which surged over the last year. We aim to provide a simplified assessment of the extent to which the current high demand for cryptoassets is due to the modest returns on classical conservative investments at a time of unprecedentedly low interest rates.

The July outlooks for economic growth in the economies we monitor are almost unchanged from the previous month. The exceptions are slightly higher inflation outlooks for the euro area and Germany and lower outlooks for German GDP. The main uncertainty of the outlooks stems from deteriorating expectations regarding world trade, which could be adversely affected to an increasing degree by the USA's protectionist measures and retaliation by the countries affected. Nevertheless, according to current outlooks, the US economy will continue to enjoy robust growth of almost 3%, despite further expected monetary policy tightening by the Fed. The outlooks for the UK and Japan still indicate distinctly lower growth (than in the USA and the euro area) and are unchanged from the previous month. In the case of the UK, this is due mainly to long-running negative factors related to Brexit, which still lacks clear contours as time goes on. The outlooks for UK inflation remain above the inflation target, so the probability of a further increase in UK interest rates is gradually rising. In Japan it will be hard to lift inflation from its low 1% level.

The outlooks for BRIC countries still expect solid GDP growth rates. The growth outlooks for India and China have remained traditionally strong around current levels for several months now. In the case of China, whether these outlooks materialise will depend largely on the degree of escalation of trade disputes with the USA. The Indian economy will gradually return to more than 7.5% growth from its current slightly weaker rates. The inflation estimates for China are relatively low, only just above the 2% level. The expected inflation figure in India rose slightly to 5%, still in line with the robust economic growth in that country from the macroeconomic perspective. The outlooks for Brazil and Russia have generally worsened over the last month, although their expected results are still solid by post-crisis standards. Despite the current correction, the Brazilian and Russian economies are expected to grow by around 3% and 2% respectively, amid inflation close to 4%.

According to market outlooks, euro area interest rates will remain negative until the end of 2019. By contrast, US interest rates can be expected to keep edging up. According to CF, the US dollar will weaken against all the monitored currencies except the rupee one year ahead. Compared to the June issue, the outlook for the Brent crude oil price was affected by an unusually large number of factors. According to CF, the price will be just above USD 71 a barrel at the one-year horizon. The outlook for metals prices is broadly flat, while food commodity prices are expected to start rising again.

GDP growth and inflation development and outlook in monitored countries



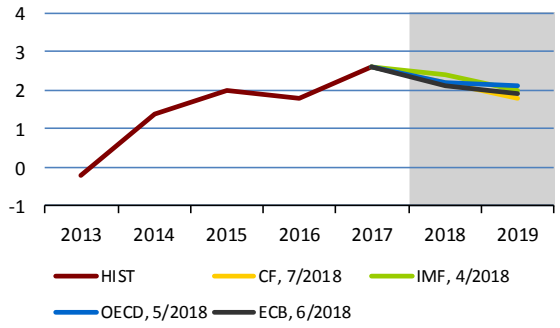
Note: The figures represent the weighted averages of historical series / outlooks in individual countries. The weights are based on nominal GDP measured in USD during 2013–2016 (source: EIU). Advanced countries: euro area, United States, United Kingdom, Japan. BRIC countries: China, India, Russia, Brazil.

II.1 Euro area

Despite recent weaker-than-expected data, euro area growth remains solid. Some of the latest economic indicators and survey results are weaker, but they remain consistent with continued economic growth. For example, the PMI in manufacturing has been falling since January, but at 54.9 in June it remains above-average and safely in the expansion band. The ECB's ongoing easy monetary policy is boosting domestic demand. Private consumption is being aided by a continued drop in the unemployment rate, which fell to 8.4% in Q2, and by still rising disposable income of households. However, the latter is being partly offset by higher fuel prices. The favourable financing conditions and solid household demand are supporting business investment. However, uncertainty linked with global factors has grown recently. The introduction of higher trade tariffs and the possibility of further protectionist measures are one of the key risks to economic growth. The monitored GDP growth outlooks for this year were therefore revised downwards. Growth in euro area economic activity is expected to reach around 2.2% this year and slow to 1.8% next year.

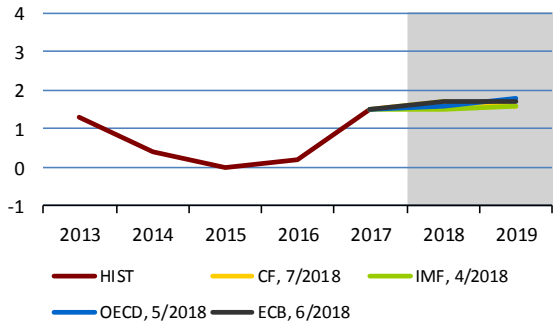
According to Eurostat's flash estimate, euro area annual inflation rose from 1.9% in May to 2.0% in June. By contrast, core inflation fell slightly from 1.1% in May to 1.0% in June. Energy prices are thus currently the main contributor to euro area inflation, followed by prices of food and services. According to market outlooks, however, oil prices should fall gradually from their current elevated levels over the forecast horizon. Headline inflation should be around 1.7% this year and the next. Core inflation is expected to rise from 1.1% this year to 1.4% next year. Over the forecast horizon, inflation is therefore expected to be driven mostly by domestic cost factors – higher capacity utilisation, a tighter labour market and continued wage growth – and by still easy monetary policy of the ECB.

GDP growth, %



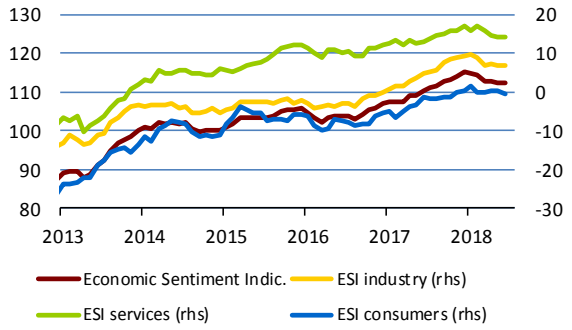
	CF		IMF	OECD	ECB
2018	2.2	➡	2.4	2.2	2.1
2019	1.8	➡	2.0	2.1	1.9

Inflation, %



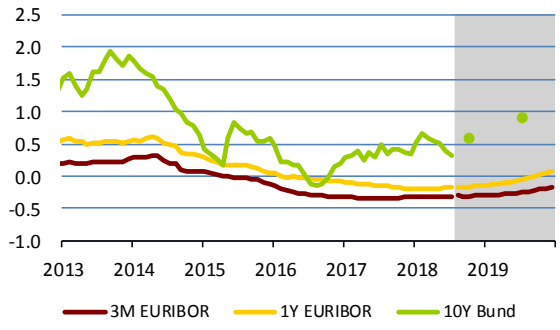
	CF		IMF	OECD	ECB
2018	1.7	↗	1.5	1.6	1.7
2019	1.6	➡	1.6	1.8	1.7

Leading indicators



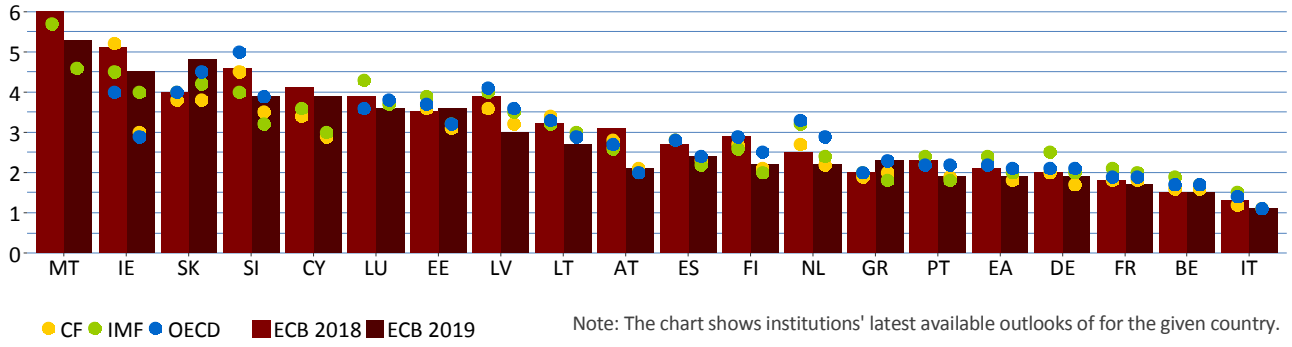
	ESI	industry	services	consumers
4/18	112.7	7.3	14.7	0.3
5/18	112.5	6.9	14.4	0.2
6/18	112.3	6.9	14.4	-0.5

Interest Rates, %



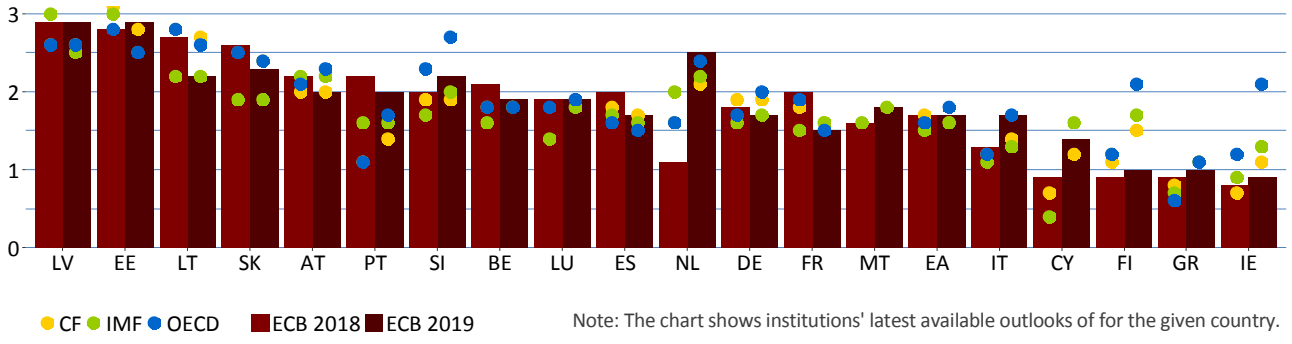
	06/18	07/18	10/18	07/19
3M EURIBOR	-0.32	-0.32	-0.31	-0.25
1Y EURIBOR	-0.18	-0.18	-0.16	-0.05
10Y Bund	0.39	0.33	0.60	0.90

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



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

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

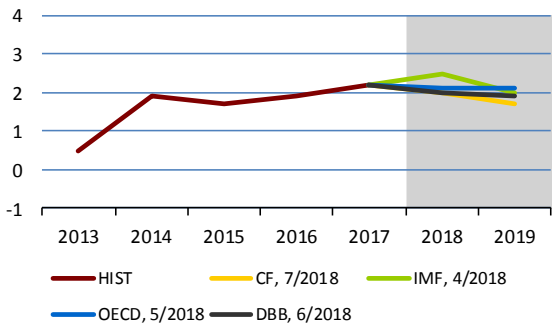


Note: The chart shows institutions' latest available outlooks of for the given country.

II.2 Germany

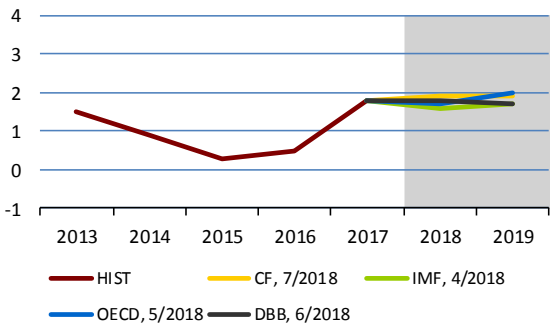
The outlooks for German economic growth were revised downwards (CF). The revisions take into account, among other factors, the GDP growth slowdown in 2018 Q1, which was due mainly to a decrease in the contribution of net exports as well as investment and government consumption. The PMI in manufacturing has been falling since the start of this year but remains clearly in the expansion band. The IFO and ZEW leading indicators also deteriorated further. The main risk to the export-oriented German economy is a rise in protectionist trade pressures, accompanied by the risk of a hard Brexit. As for the inflation outlook, the July CF sees stronger inflation pressures than a month earlier. Amid relatively stable core inflation, headline inflation has been driven chiefly by energy prices since May 2018.

GDP growth, %



	CF	IMF	OECD	DBB
2018	2.0	2.5	2.1	2.0
2019	1.7	2.0	2.1	1.9

Inflation, %



	CF	IMF	OECD	DBB
2018	1.9	1.6	1.7	1.8
2019	1.9	1.7	2.0	1.7

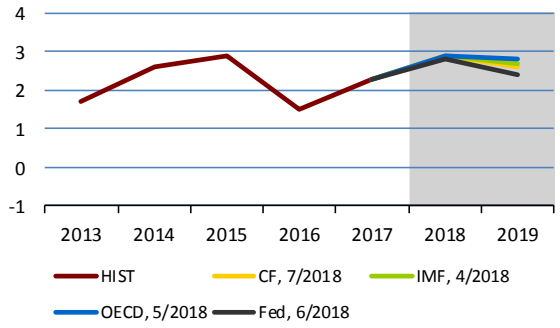
II.3 United States

The trade dispute between the USA and China escalated further in early July, with the USA imposing a 25% tariff on imports of Chinese goods totalling USD 34 billion a year. China responded quickly by imposing tariffs on US goods imports of the same volume. The USA then announced a 10% tariff on imports of Chinese goods totalling more than USD 200 billion a year. The tariffs, which will come into force in September, will also apply to common consumer goods (such as handbags and digital cameras). President Trump had threatened earlier that he was ready to impose tariffs on goods totalling USD 550 billion, more than total US imports from China last year. In 2017, China exported goods worth USD 506 billion to the USA. At the same time, several countries, including the EU, imposed retaliatory tariffs on US imports, but the extent of the measures did not exceed 3% of the total imports of any trading partner.

The escalation of trade disputes poses a major risk to US industry. However, industrial production rose by a robust 3.5% year on year in May and capacity utilisation went up further. The ISM PMI leading indicator in manufacturing exceeded market expectations in June, with both production and additions to inventories expanding rapidly. Consumer sentiment also remains robust despite worse expectations regarding future conditions. Non-farm payrolls reached 213,000 in June, confirming continued favourable labour market conditions. The unemployment rate (4%) saw a slight reversal of its previous decrease and the average hourly wage rose by 2.7% year on year, as in the previous month. According to the Atlanta Fed, GDP growth could reach 3.9% in Q2.

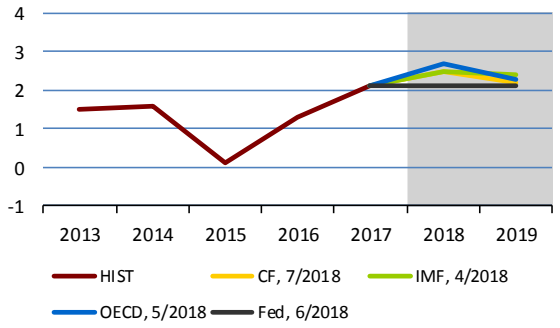
Inflation pressures increased in line with expectations, with core PCE inflation hitting the central bank's target in May. Headline inflation rose to 2.8% in June, mainly on the back of rising energy prices, but there is also speculation that it is already being affected by the tariffs on imported goods. According to the minutes of the FOMC meeting, the international trade tensions pose a substantial risk to the US economy, especially with regard to corporate investment.

GDP growth, %



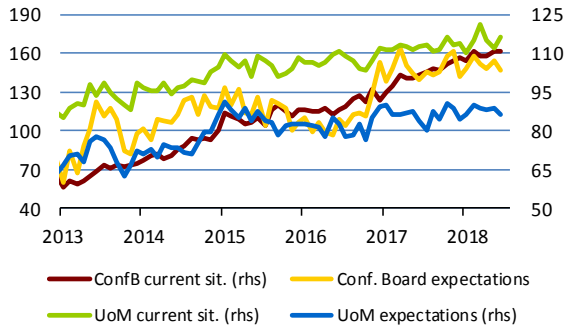
	CF	IMF	OECD	Fed
2018	2.9	2.9	2.9	2.8
2019	2.6	2.7	2.8	2.4

Inflation, %



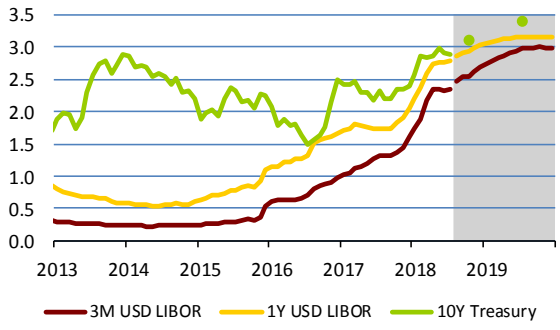
	CF	IMF	OECD	Fed
2018	2.5	2.5	2.7	2.1
2019	2.2	2.4	2.3	2.1

Leading indicators



	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
4/18	157.5	104.3	114.9	88.4
5/18	161.2	107.2	111.8	89.1
6/18	161.1	103.2	116.5	86.3

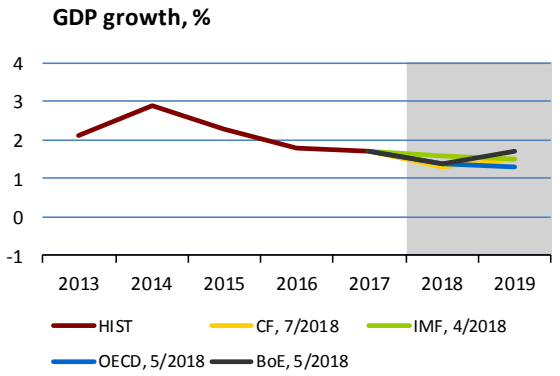
Interest Rates, %



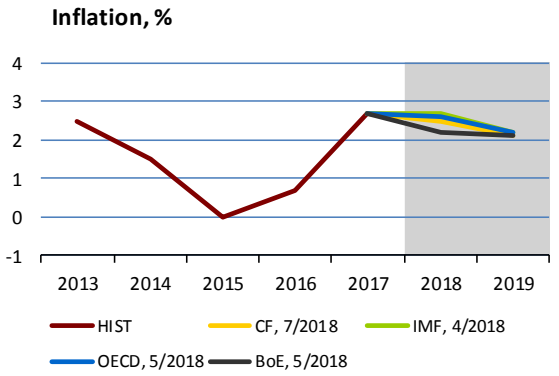
	06/18	07/18	10/18	07/19
USD LIBOR 3M	2.33	2.34	2.53	2.97
USD LIBOR 1R	2.76	2.76	2.94	3.15
Treasury 10R	2.91	2.87	3.10	3.40

II.4 United Kingdom

The UK central bank kept its key interest rates unchanged at its June meeting. However, it repeated in its statement that it continued to expect a gradual tightening of monetary policy. Three out of the nine BoE decision-makers voted for a rate hike. According to the outlooks of the monitored institutions, inflation will be just above the 2% target this year and converge to it from above next year. The final UK GDP growth figures for Q1 shifted the original estimates slightly upwards (to 0.2% quarter on quarter) thanks to slightly better net exports. However, it remains uncertain whether the economic slowdown in early 2018 was only temporary, as industrial production fell for the third consecutive month in May. The very first outturn of the official monthly UK GDP indicator (for March to May) was 0.2%. According to this indicator, the drop in industrial production was offset by higher services growth. The PMIs improved further in June. The NIESR estimates quarterly GDP growth in Q2 at 0.4%.



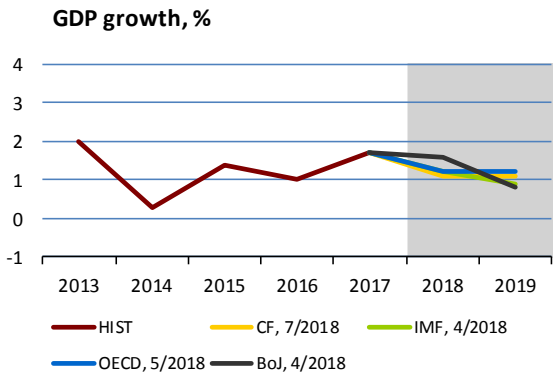
	CF	IMF	OECD	BoE
2018	1.3	1.6	1.4	1.4
2019	1.5	1.5	1.3	1.7



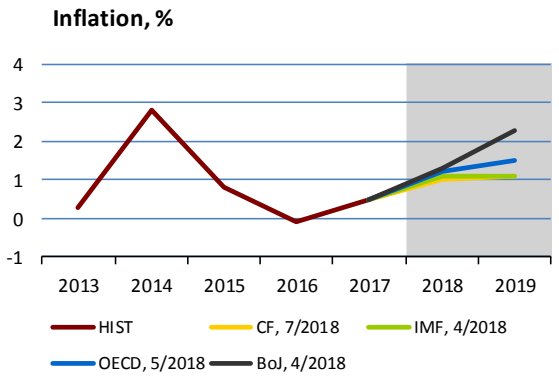
	CF	IMF	OECD	BoE
2018	2.5	2.7	2.6	2.2
2019	2.1	2.2	2.2	2.1

II.5 Japan

Year-on-year retail sales growth slowed in May, as did household spending. By contrast, wage growth accelerated again and unemployment fell to 2.2%, the lowest figure since August 1992. The drop in the Japanese unemployment rate was due mainly to lower youth unemployment. Year-on-year industrial production growth increased in May. The PMI in manufacturing went up to 53 points in June. According to purchasing managers, output and employment increased faster and new orders more slowly, while exports declined. The GDP growth outlooks for both years were unchanged. Annual inflation edged up in May. Consumer price inflation rose by 0.1 pp to 0.7%. This was due to faster growth in food and transport prices. No changes were recorded in the path of expected inflation, which will fluctuate around 1% only.



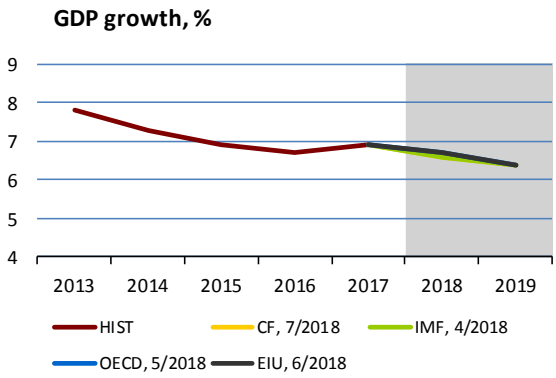
	CF	IMF	OECD	BoJ
2018	1.1	1.2	1.2	1.6
2019	1.1	0.9	1.2	0.8



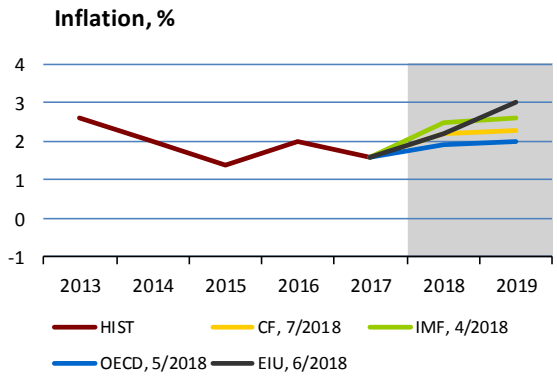
	CF	IMF	OECD	BoJ
2018	1.0	1.1	1.2	1.3
2019	1.1	1.1	1.5	2.3

III.1 China

The trade disputes with the USA were reflected not only in depreciation pressure on the Chinese currency with respect to the US dollar, but also in a decline in share prices of Chinese firms in the South Asian region. The Chinese central bank probably reacted to the recent developments by intervening in the financial markets to support liquidity and ease tensions. The trade disputes have not affected China's trade so far. In June, its trade surplus stood at USD 41 billion, with exports rising by 11.3% year on year. However, this may be a one-off effect of exporters trying to hasten exports before tariffs are imposed in July. Any worsening of export growth in China would affect most South-East Asian economies via global and regional chains. However, the July CF did not revise its economic outlook for China for now.



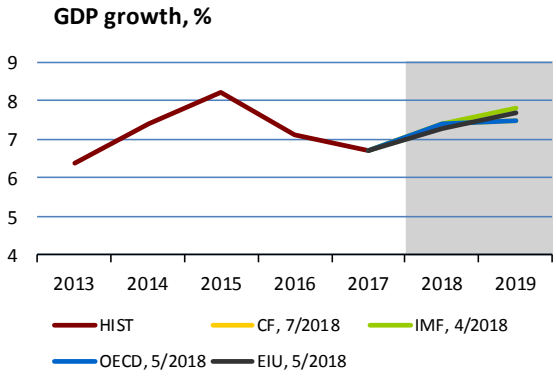
	CF	IMF	OECD	EIU
2018	6.6	6.6	6.7	6.7
2019	6.4	6.4	6.4	6.4



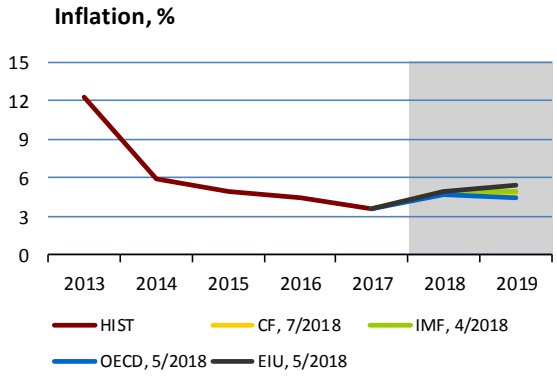
	CF	IMF	OECD	EIU
2018	2.2	2.5	1.9	2.2
2019	2.3	2.6	2.0	3.0

III.2 India

Year-on-year industrial production growth slowed sharply in May, despite higher mining output and electricity production, owing to a sizeable decline in manufacturing output. However, the slowdown should be only temporary, as the PMI in manufacturing surged to 53.1 in June. According to purchasing managers, output, new orders and employment rose at their fastest pace this year. The latest CF marginally lowered its GDP growth forecast for India for the next fiscal year 2019/2020. However, the growth should stay at an impressive 7.5% this year and the next. Annual consumer price inflation went up by 0.1 pp to 5% in June. Growth in food prices slowed slightly, but energy prices increased. CF upped its prediction slightly for both periods monitored. Consumer price inflation is thus expected to be slightly below 5% this year and the next.



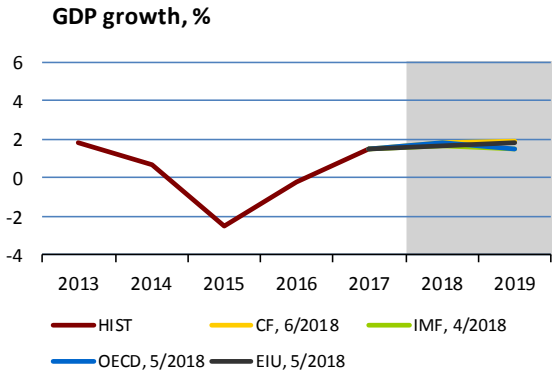
	CF	IMF	OECD	EIU
2018	7.4	7.4	7.4	7.3
2019	7.5	7.8	7.5	7.7



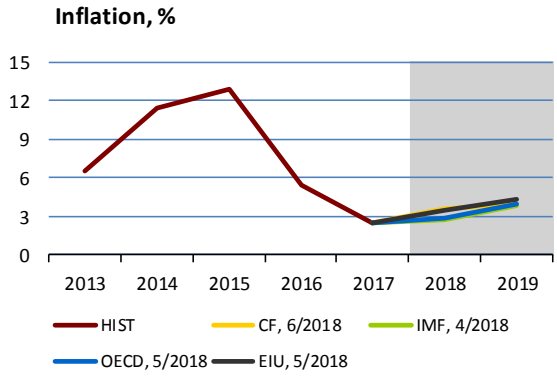
	CF	IMF	OECD	EIU
2018	4.9	5.0	4.7	5.0
2019	4.8	5.0	4.4	5.4

III.3 Russia

The preliminary Russian GDP estimate for Q1 materialised (1.3% year on year). The rise in economic activity was driven chiefly by services (mainly financial and real estate services and insurance), but also by public administration. Moreover, industrial activity returned to growth in Q1, including in manufacturing. Industry recorded positive annual growth in both April (3.9%) and May (3.7%). However, leading indicators are signalling a deterioration. The PMI in manufacturing dropped further in June (to 49.5) due to worse data on new orders and employment. The PMI in services remains in the expansion band but decreased for the same reasons. Overall, economic growth will remain below 2% until the end of next year. The July CF outlook was unchanged, expecting GDP growth of 1.8% this year and 1.9% the next. The inflation outlook for December 2019 returned to 4%.



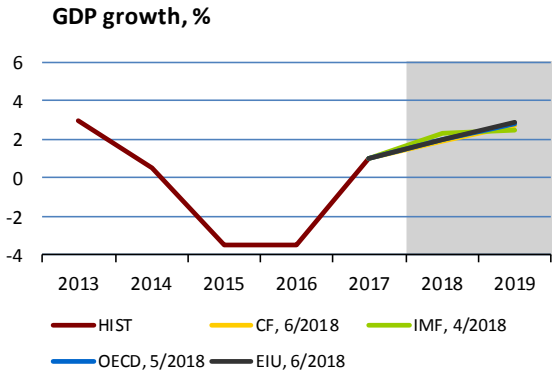
	CF	IMF	OECD	EIU
2018	1.8 →	1.7	1.8	1.7
2019	1.9 →	1.5	1.5	1.8



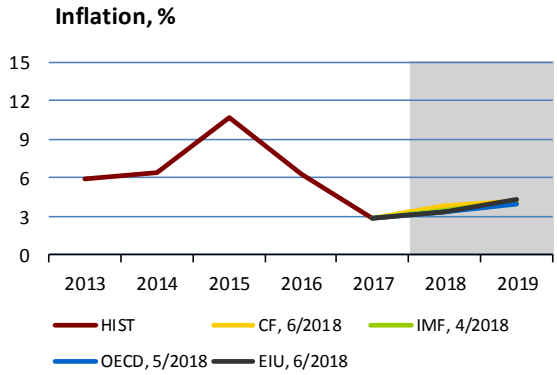
	CF	IMF	OECD	EIU
2018	3.6 →	2.8	2.9	3.5
2019	4.0 ↗	3.8	4.0	4.3

III.4 Brazil

Brazilian industrial production fell by almost 11% in May (and by 7% year on year). The June PMI sank even deeper into the contraction band. Following a decline of 1.5% a month earlier, food prices rose by almost 1.1% year on year in June, increasing annual headline inflation to 4.4%. This is the highest inflation rate since March 2017. In addition to food prices, transport prices and housing costs rose markedly in June (by 8.8% and 7.7% respectively). Higher inflation was also fostered by the long-running depreciation of the real and by a truck drivers' strike in May. Despite inflation returning to the target, the weak economic activity and high unemployment do not currently indicate any room for tightening monetary policy. The central bank's key rate remained unchanged in June. CF lowered its GDP growth outlook for this year by a sizeable 0.6 pp to 1.9% and simultaneously decreased its outlook for next year. It revised inflation upwards by 0.3 pp to 3.8% and kept the outlook for next year unchanged.



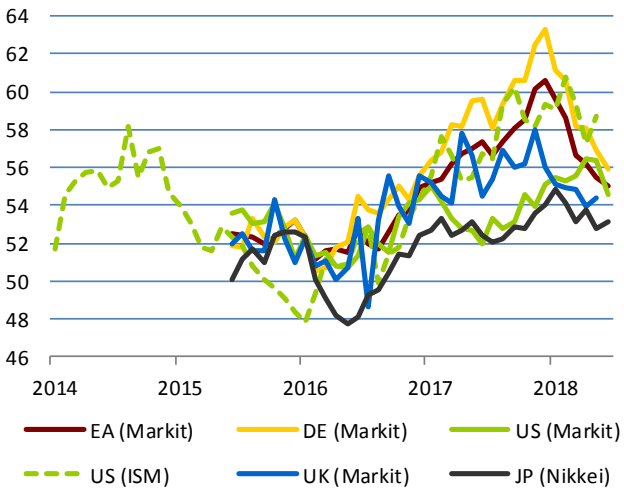
	CF	IMF	OECD	EIU
2018	1.9 ↘	2.3	2.0	2.0
2019	2.7 ↘	2.5	2.8	2.9



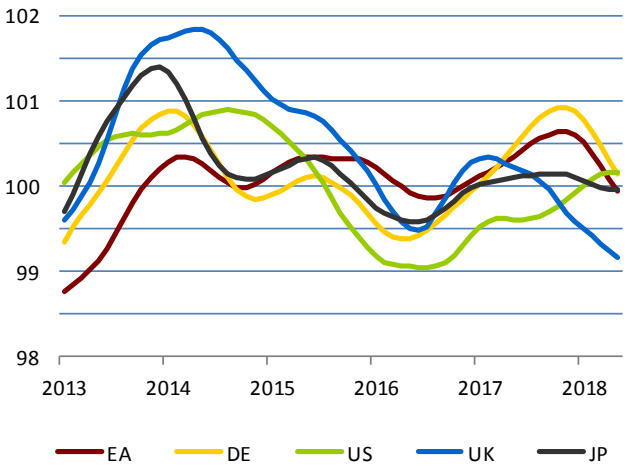
	CF	IMF	OECD	EIU
2018	3.8 ↗	3.5	3.4	3.4
2019	4.2 →	4.2	4.0	4.3

IV.1 Advanced economies

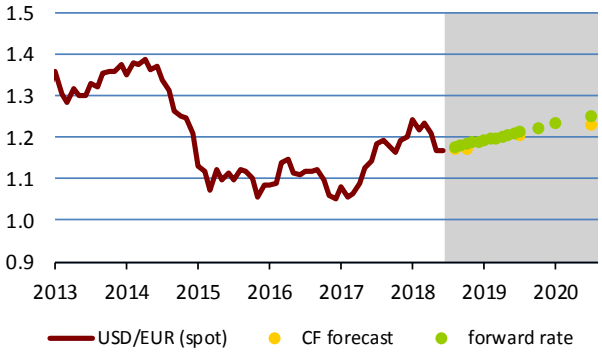
PMI in manufacturing



OECD Composite Leading Indicator

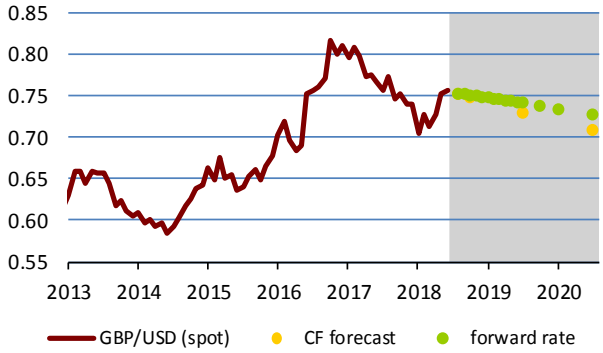


The US dollar (USD/EUR)



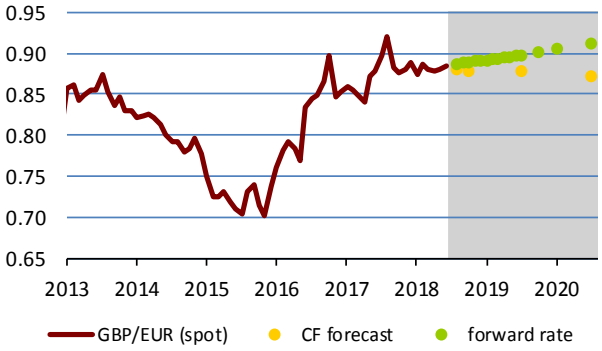
	9/7/18	08/18	10/18	07/19	07/20
spot rate	1.176				
CF forecast		1.171	1.173	1.204	1.230
forward rate		1.178	1.183	1.211	1.252

The British pound (GBP/USD)



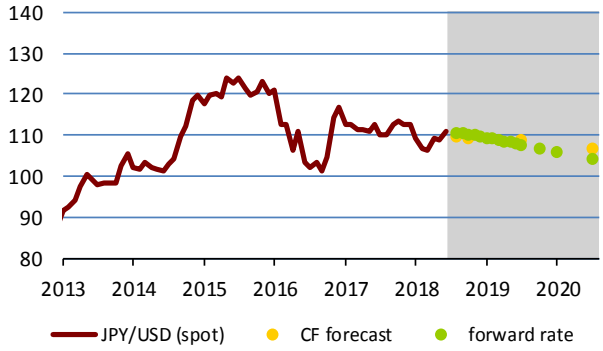
	9/7/18	08/18	10/18	07/19	07/20
spot rate	0.754				
CF forecast		0.752	0.748	0.729	0.709
forward rate		0.753	0.751	0.741	0.728

The British pound (GBP/EUR)



	9/7/18	08/18	10/18	07/19	07/20
spot rate	0.887				
CF forecast		0.880	0.877	0.878	0.872
forward rate		0.887	0.889	0.898	0.911

The Japanese yen (JPY/USD)

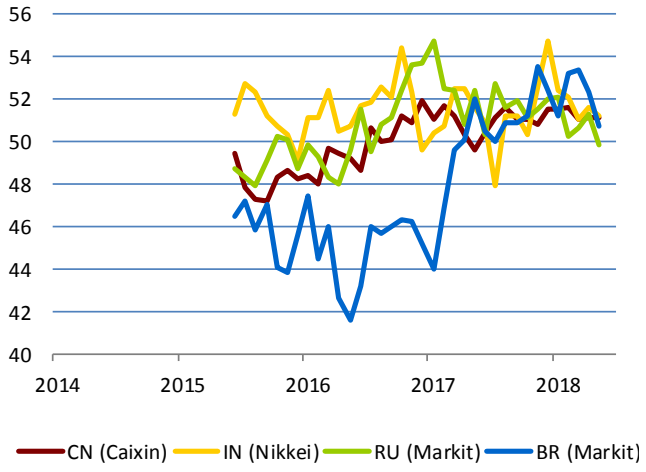


	9/7/18	08/18	10/18	07/19	07/20
spot rate	110.7				
CF forecast		109.7	109.4	108.7	106.6
forward rate		110.6	110.1	107.7	104.1

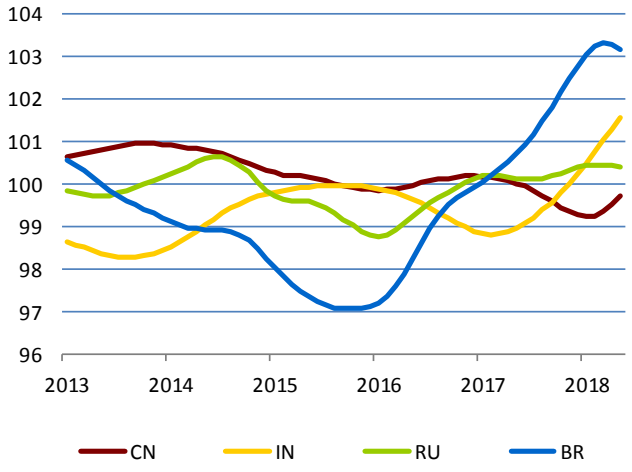
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.2 BRIC countries

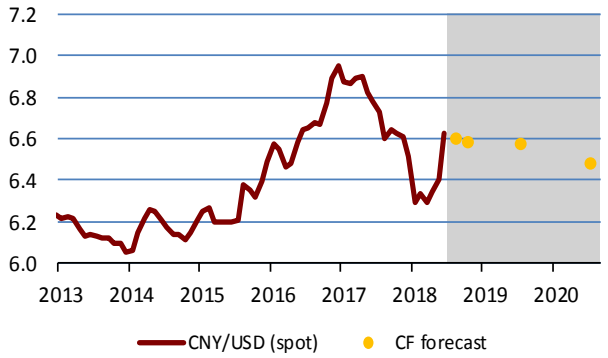
PMI in manufacturing



OECD Composite Leading Indicator

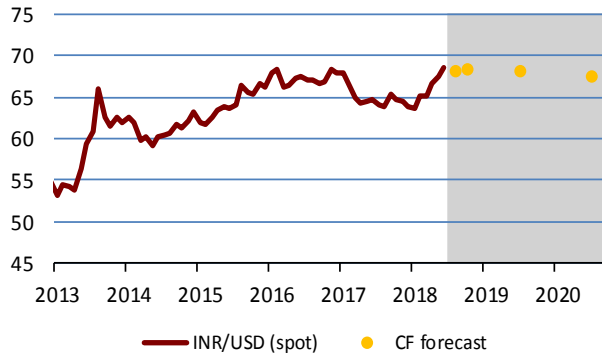


The Chinese renminbi (CNY/USD)



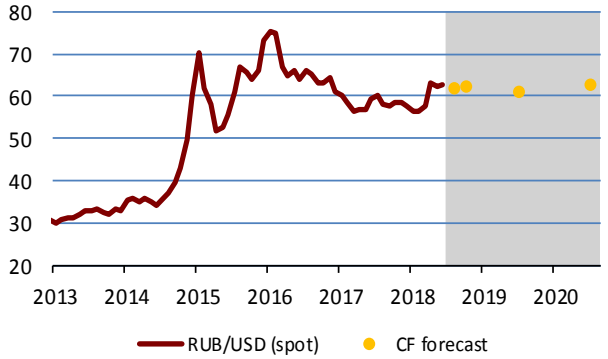
	9/7/18	08/18	10/18	07/19	07/20
spot rate	6.617				
CF forecast		6.597	6.581	6.575	6.477

The Indian rupie (INR/USD)



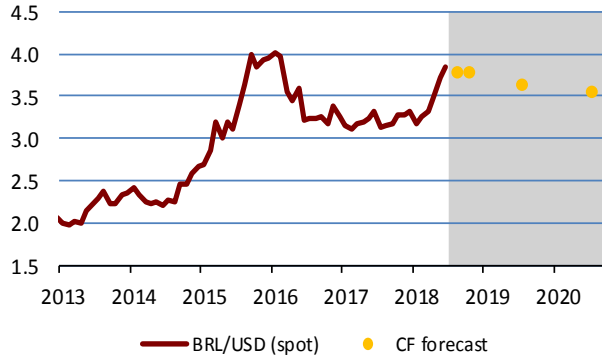
	9/7/18	08/18	10/18	07/19	07/20
spot rate	68.75				
CF forecast		68.15	68.28	68.22	67.39

The Russian rouble (RUB/USD)



	9/7/18	08/18	10/18	07/19	07/20
spot rate	62.71				
CF forecast		62	62.23	60.93	62.84

The Brazilian real (BRL/USD)



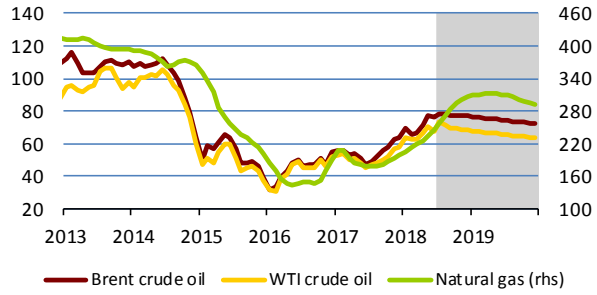
	9/7/18	08/18	10/18	07/19	07/20
spot rate	3.863				
CF forecast		3.78	3.776	3.629	3.54

Note: Exchange rates as of last day of month.

V.1 Oil and natural gas

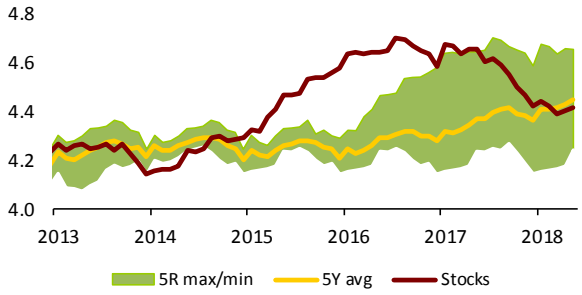
After climbing to a three and a half year high just shy of USD 80/bbl in May, the Brent crude oil price corrected in late May on market speculation that OPEC and Russia would agree to increase production at the OPEC meeting in Vienna on 22–23 June. The oil price therefore fluctuated just above USD 75/bbl for most of June. Despite initial resistance from Iran, the OPEC meeting eventually resulted in an agreement to raise output by 1 million barrels a day as from July (an immediate increase of 600,000–700,000 barrels a day is realistic). However, the increase is only intended to bring production into line with the originally planned cap agreed in January 2017 (and thus make up for shortfalls in Venezuela and Libya). Concerns of undersupply, exacerbated by a production shortfall in Canada and an expected decrease in exports from Iran due to US sanctions, therefore returned to the market. By the end of June, the Brent crude oil price had thus returned to USD 80/bbl. Shortly before mid-July, however, oil prices plunged below USD 75/bbl as Libya announced that it was opening its export ports and hedge funds responded to the increased oil supply by closing their speculative positions. Market sentiment was additionally worsened by a further escalation of the trade disputes between the USA and China. The USA also newly admitted that some countries might be exempted from the trade sanctions on Iran. Analysts are currently finding it difficult to agree on future oil price developments. What is certain, however, is that increased production in Saudi Arabia will reduce global spare extraction capacity and unexpected production shortfalls will thus cause higher oil price volatility. The market curve implies a price of USD 77.4/bbl on average for the rest of this year and USD 74.4/bbl next year. The July CF expects USD 71.2/bbl one year ahead.

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

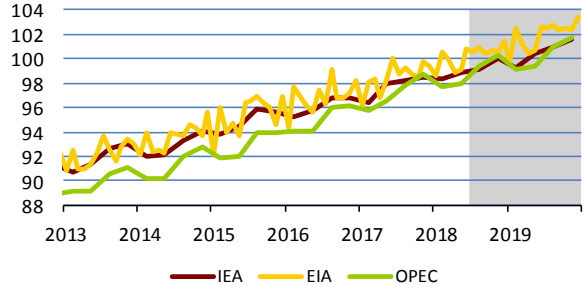


	Brent	WTI	Natural gas
2018	74.24	67.72	254.47
2019	74.38	65.53	305.62

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

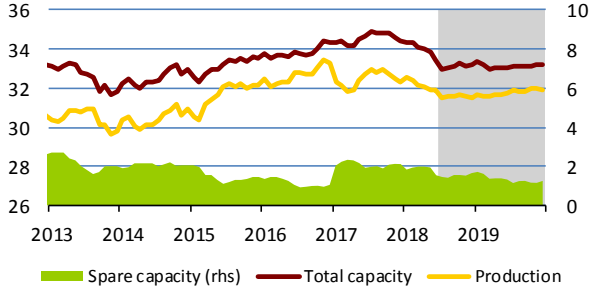


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2018	99.13	100.20	98.85
2019	100.56	101.91	100.28

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



	Production	Total capacity	Spare capacity
2018	31.87	33.57	1.69
2019	31.79	33.12	1.33

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

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

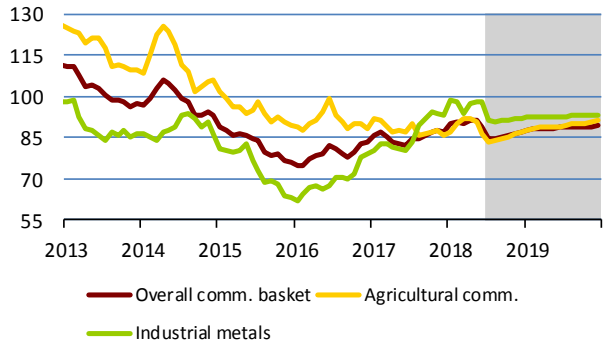
V.2 Other commodities

The aggregate non-energy commodity price index went down in June and especially in early July. This decline was due to the food commodity price sub-index in both months and also to a strong contribution of the industrial metals price sub-index in July. However, while the outlook for metals prices is broadly flat, food commodity prices are expected to start rising again.

The decline in the food commodity price index was due mainly to corn and soy prices, which recorded a strong downward trend from early June onwards. By contrast, the wheat price dropped only modestly in June and recouped some of its losses in the first half of July. However, the outlook for all three commodities is rising. The price of rice was highly volatile and rose slightly in early July. Likewise, prices of sugar and coffee started falling modestly June, but their outlook is rising. The pork price saw further growth in June but is expected to record a seasonal decline. The beef price is expected to go up after previously stagnating at very low levels. The price of natural rubber decreased, again approaching its lowest level in many years.

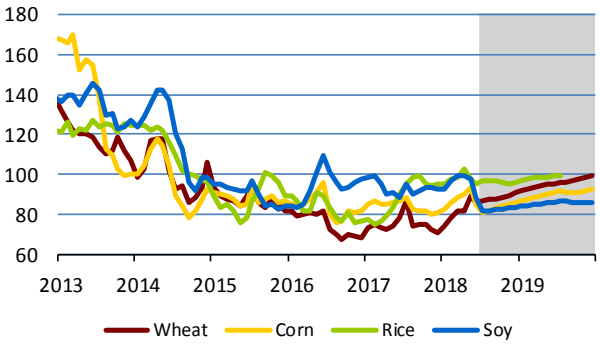
The price of copper surged at the start of June on concerns of a strike at the world's largest mine in Chile, which attracted speculators. In mid-June, however, the concerns receded and the price started to fall sharply. Prices of other industrial metals also declined (with only iron ore prices stagnating) due to concerns that the US–China trade disputes would cause demand to go down. Metals prices are also being pushed down by a slowdown in global manufacturing, as signalled by a further fall in the JPMorgan PMI from 53.1 to 53.0 in June, the lowest figure in 11 months. The new exports component is most at risk, nearing the threshold of 50. Prices of copper and aluminium fell despite a drop in their stocks on the LME.

Non-energy commodities price indicies



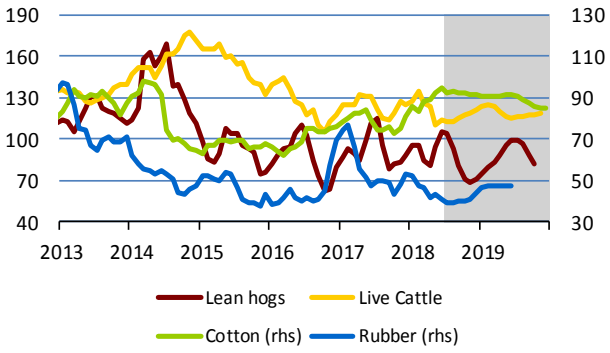
	Overall	Agricultural	Industrial
2018	88.1	87.5	94.4
2019	88.6	89.5	92.8

Food commodities



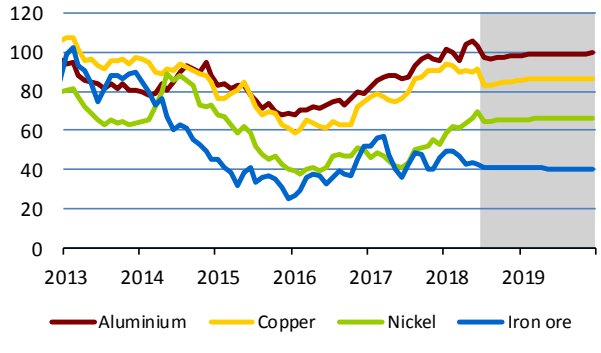
	Wheat	Corn	Rice	Soy
2018	85.2	85.6	97.0	89.0
2019	95.6	90.3	98.5	85.7

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2018	87.1	119.5	90.6	43.1
2019	88.7	118.9	89.2	47.3

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2018	99.6	87.7	64.4	43.6
2019	98.9	86.4	66.0	40.5

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.

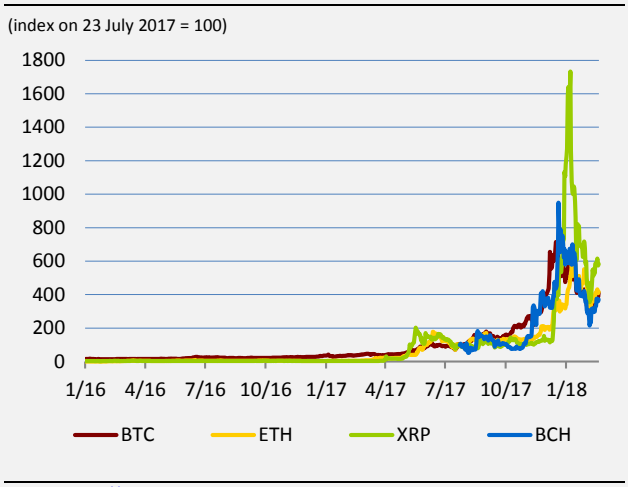
Cryptoassets vs. conventional investments at a time of low interest rates[1]

The cryptoassets market has seen an extraordinary inflow of investors and related price growth over the last year. As a result, there has been increasing talk of traditional currencies being crowded out, even though the rise is connected more with speculative purchases by profit seekers at a cost of great risk than with widespread use of cryptoassets for making payments or as a store of value. This article asks to what extent the current high demand for cryptoassets can be explained by the still modest yields offered by classical conservative investments in a financial world where interest rates remain historically very low.

Introduction: what can cryptocurrency change in the financial world?

The explosion in demand for cryptocurrency since mid-2017 has given a boost to those foretelling the end of traditional banking, including central banking, and traditional investment.[2] For several years now, since the birth of the first global cryptocurrency bitcoin, the prophets of cryptorevolution have been declaring the dawn of a new monetary era liberated from state control (and manipulation) of money circulation and the triumph of autonomous individuals (or, on closer inspection, communities of like-minded individuals, as is usually the case with social utopias) satisfying their own currency demand at will. However, the cryptocurrency boom (see Chart 1) has also caught the attention of monetary and regulatory policymakers, for whom the interconnectedness between virtual markets and the real markets they are responsible for has begun to be relevant. Frequently asked questions include: Can cryptocurrency serve as a reliable "reserve" investment instrument akin to precious metals or commodity derivatives? Are overall interest rates on the main official currencies and yields on government bonds playing a major role in such use? How innovative are cryptocurrency markets? How is the interconnectedness between cryptocurrencies and other assets traditionally used as stores of value (such as gold) evolving? Can the age-old convention of using precious metals and stones as a store of wealth change so much in modern society that a suitably constructed digital currency will become the new gold? And will the interest in cryptocurrency diminish investors' current appetite for government bonds and disrupt the conventional monetary transmission mechanism?

Chart 1 – Price indices of the four most important cryptocurrencies since the start of 2016



Source: http://www.bitcoincharts.com, author's calculations
Note: BTC = bitcoin, ETH = ethereum, XRP = Ripple, BCH = Bitcoin Cash

It might be useful for policymakers to take a look at the markets for major conventional investment products against the backdrop of the recent cryptocurrency developments. This article therefore provides basic information on parallel developments in such markets, including a geographical breakdown and intensity of use, to build up a picture of the relevance of the problem areas mentioned above. The main aim of this brief overview is to describe the current implications of existing cryptocurrencies and new cryptocurrency issues (initial coin offerings, ICOs) for conventional currency instruments. Most of the above normative questions have already drawn the attention of political economists (Thiele and Diehl, 2017) and, even earlier, quantitative researchers. Kristoufek (2015), for example, explores the relationship between bitcoin and gold and the effect of Chinese investors in the case of the bitcoin exchange rate. However, the data he uses relate to the period before the current speculative cryptocurrency fever. In what follows, therefore, we focus on developments over the last two years. As our source of data on the demand for various financial product categories, we have chosen the time series of representative prices of units of exchange-traded funds (ETFs) in the relevant segments (precious metals, commodities and government bonds). These prices have the benefit of reflecting overall investor demand for instruments in the selected category and not just movements in prices of underlying assets (for example, growth in the unit price of an energy ETF does not automatically imply a higher price of oil and oil

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

[2] A general introduction to cryptocurrency and blockchain technology (virtual accounting records on cryptocurrency issues and transactions) can be found at https://decryptionary.com/what-is-cryptocurrency/introduction-to-cryptocurrency/, while a geek's guide is given at https://blockgeeks.com/guides/what-is-cryptocurrency/. More information about the functioning of blockchains from the central banker's perspective is available at http://www.ecb.europa.eu/explainers/tell-me-more/html/distributed_ledger_technology.en.html.

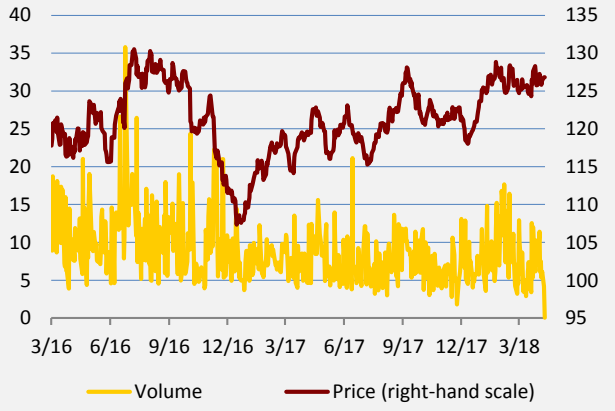
derivatives but indicates an overall willingness to invest in such derivatives for other structural reasons, including those we are interested in, regardless of the current price of the underlying commodity).

Cryptocurrency and precious metals

The gold market seems to have been just as insensitive to cryptocurrencies during their 2017 boom as it was in the 2012–2014 period analysed in Kristoufek (2015). Demand for gold was flat from mid-2016 until mid-2017. The rise in the gold price in the second half of 2017 coincided almost exactly with the start of the cryptocurrency fever, but was far smaller. Nor was there any surge in the trading volume in 2017 – such surges usually implying transfers of large amounts in major investment portfolios (trading volumes mostly declined in the second half of 2017 compared to previous months) – and we can only guess that the two market segments share a similar search-for-yield sentiment among investors (see Chart 2). Overall, the gold market remains the domain of traditional investors with long-established risk preferences. The same is certainly not true of cryptocurrency. Some precious metals may have gone through their own cycles of investor interest during the recent cryptocurrency fever, but, with the exception of gold, none of these cycles has been big enough to indicate a significant revision of investor portfolios to/from instruments linked to those metals. It is just as hard to trace a link with the increased speculative demand for cryptocurrency.

Chart 2 – Gold ETF prices and trading volumes since the start of 2016

(volume in millions of dollars, price in dollars)



Source: Bloomberg
Note: The name of the ETF is SPDR Gold Shares (GLD US).

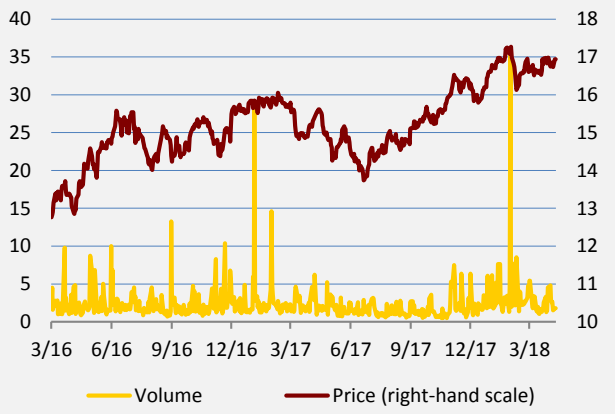
While the use of cryptocurrency as a substitute for investment in precious metals has many weaknesses, attempts to synthesise these two types of assets using gold-backed cryptocurrencies may have more chance of success. There are currently at least four private projects of this type (Aurus, Darico, GoldCrypto and Xgold) and others are in the pipeline. They combine blockchain technology for storing value and recording transactions and the traditional principle of convertibility into gold (or some other precious commodity) as known from the history of the gold standard. Bear in mind, though, that the traditional gold standard based on official guarantees of convertibility provided by a sovereign state derived its credibility from the reputation of that state. Not surprisingly, then, in the case of private ICO initiatives, investors' trust is being sought by large firms holding significant positions on the gold market and themselves linked to the state (such as UK Royal Mint in Britain and Perth Mint in Australia), whose risk of non-compliance with any convertibility obligations is negligible. From this point of view, the enthusiasm of libertarian ideologists who see cryptocurrency as a means of weakening the power of states and central banks seems premature.

Cryptocurrency and commodity markets

The formal likeness with cryptocurrency exchange rates is rather higher for energy commodity markets than it is for precious metals. Data for relevant ETFs (see Chart 3) reveal that the commodity market situation in the second half of 2017 was reminiscent of the large-scale commodity financialisation process of the late 2000s. One can at least imagine that commodity derivatives attracted the same sort of risk-insensitive investors as cryptocurrencies.

Chart 3 – Commodity ETF prices and trading volumes since the start of 2016

(volume in millions of dollars, price in dollars)



Source: Bloomberg
Note: The name of the ETF is PowerShares DB Commodity Index Tracking Fund.

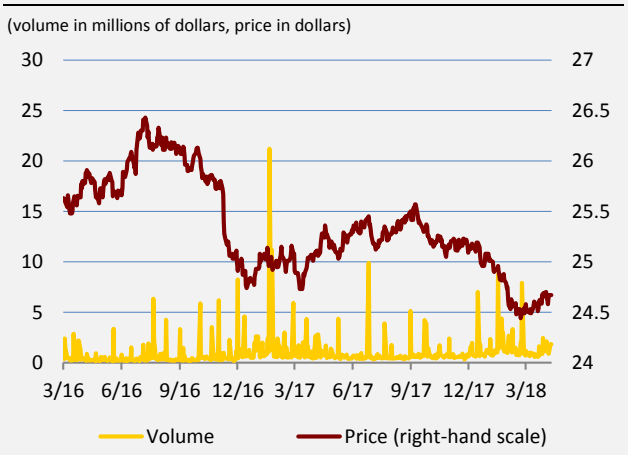
Energy commodity markets are currently seeing a number of initiatives to create digital assets pegged to commodity prices or stocks and using blockchains. Note, however, that blockchain transaction verification in its current form is dependent on network externality, i.e. it requires many voluntary participants to interact in the mining process. This assumes both strong mutual trust and a willingness to stick around in the system. In the case of a state wishing to initiate, say, the use of a cryptocurrency backed by national

commodity stocks (e.g. Petro in Venezuela or similar projects in Gulf countries), sustaining such a community may be an insurmountable problem. On the other hand, many mining companies already routinely fund their development using ICOs. Investors can then use the relevant blockchain to mine new tokens. It is thus possible that a sufficiently trustworthy group of such companies will eventually reach a point where it will make sense to issue a joint cryptocurrency backed by their production.

Cryptocurrency and government bonds

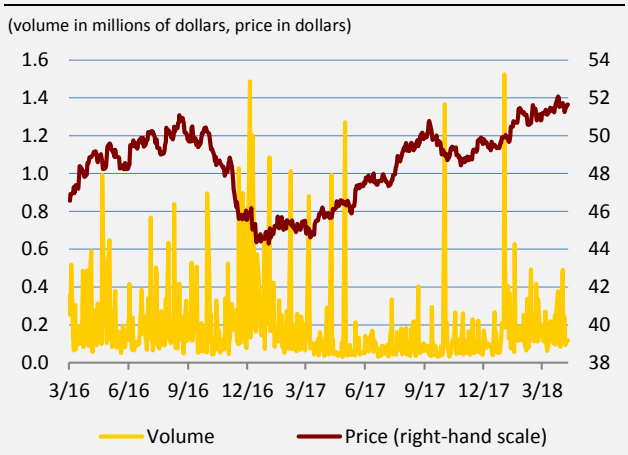
Bond markets have seen sharp ups and downs over the past two years, but there is nothing to suggest a direct link between those swings and the events surrounding cryptocurrency. Government bond markets are among those which cryptocurrency prophets predict will soon die because of a lack of interest stemming from a higher-quality substitute from the blockchain world. As in the case of commodities, we use data on the prices of, and trading in, relevant ETFs to assess the probability of fundamental changes in investor interest. They show that demand for US Treasury Bonds has been flat or falling moderately over the past two years (not once in 2017 did trading volumes attain the extremes recorded in the previous period). Moreover, the price movements are small, ruling out any major structural change (see Chart 4, left-hand panel). By contrast, after a temporary drop in the second half of 2016, interest in sovereign bonds of industrial countries except the USA showed an upward, albeit generally modest, trend in the periods of 2017 when cryptocurrencies leapt in value by thousands of per cent (see Chart 4, right-hand panel). Transaction activity connected with bond ETFs was lower overall in 2017 than in the previous year. This brief look at the data indicates that although bonds become less attractive than equities during economic booms, there is definitely no risk of cryptocurrency instruments crowding out government bonds of major advanced economies in the medium term.

Chart 4.1 – US Treasury Bond ETF prices and trading volumes since the start of 2016



Source: Bloomberg
Note: The name of the ETF is iShares U.S. Treasury Bond ETF (GOVT US).

Chart 4.2 – EU government bond ETF prices and trading volumes since the start of 2016



Source: Bloomberg
Note: The name of the ETF is iShares International Treasury Bond ETF (IGOV US).

Some emerging economies are trying to roll out their own ICOs or put their own cryptocurrencies into circulation. This segment attracts governments with poor credit and contractual reputations attempting to circumvent isolation from standard financial markets. Officially promoted projects such as the Venezuelan Petro oil cryptocurrency are known to the public, but most sovereign ICOs are run with less publicity and targeted at investors (typically East Asian) with a specific interest in undervalued securities with uncertain but strong potential for future price growth. A recent example is the tiny Marshall Islands in the Pacific Ocean. A little earlier, Iran contemplated its own ICO with the clear intention of mitigating the consequences of international sanctions. Plans for a "cryptorouble" were also seen in Russia, although they were later covered over by vague statements made by a number of officials regarding the option of joining the Venezuelan Petro project together with other oil-exporting countries.

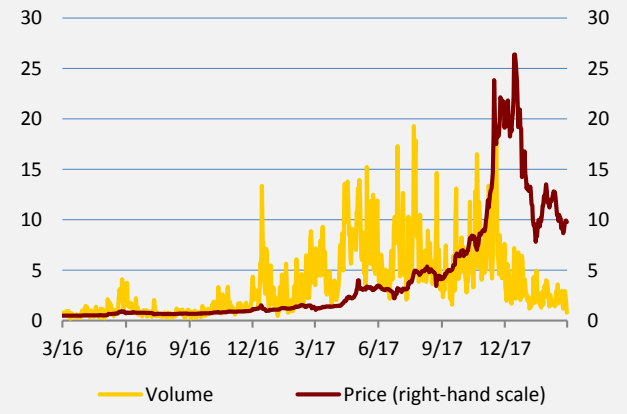
Geographical breakdown of the cryptocurrency speculation

Cryptocurrency-mining computers are often physically located in other jurisdictions than their potential buyers. For obvious reasons, cryptocurrency mining is concentrated in economies with cheap electricity and cold localities due to the need to cool the computers (China, Georgia, India and Iceland, for example, stand out in this regard), whereas investment and trading tend to take place in jurisdictions that have a low degree of regulation and are accessible to non-resident investors among whom there is strong demand for investing free funds beyond the reach of revenue authorities. As in other search-for-yield cases, therefore, investors and speculators from emerging markets have held the lead in the past ten years, with traders from China and Russia (and other CIS states) at the forefront.

Investors from mainland China currently have to trade on non-Chinese cryptocurrency exchanges. This is because regulators in mainland China have been resolved for some time now to suppress all activity related to investment in private cryptocurrencies and ultimately also the use of cryptocurrency on Chinese territory. (The use of ICOs to raise funds for standard investments is tolerated under some "creative" interpretation of the regulations unless it involves an explicit "currency" project.[3]) It is therefore natural to assume that wealthy Chinese retail investors will start to satisfy their enormous demand for private cryptocurrencies on markets in neighbouring countries where they can gain access and enjoy linguistic and cultural compatibility. The anecdotal evidence in this regard points primarily to South Korea and Singapore (and less to Hong Kong, whose financial regulators largely have to toe the political line of mainland China in this respect). In addition, the nature of cryptoassets makes it possible to skirt the traditional regulations applied by the Chinese authorities through the use of an artificial link separating the investor from the world of common cryptocurrencies by means of a non-commercial looking website. This is the practice in Singapore.[4] As a result, trading volumes on the Korean and Singaporean cryptocurrency exchanges grew in 2017 in line with the rising general interest in cryptocurrency. Chart 5 illustrates this on the example of bitcoin trades. We have chosen regional cryptocurrencies to which new users from China could have been expected to move after the domestic regulations were tightened last year. By contrast, global platforms offering trading in a wide range of (conventional and digital) currencies, such as LocalBitcoins, did not record any growth in trading in 2017. Their user structure is probably different and above all more stable than that of local East Asian exchanges.

Chart 5.1 – Bitcoin trading volumes and prices on the South Korean cryptocurrency exchange

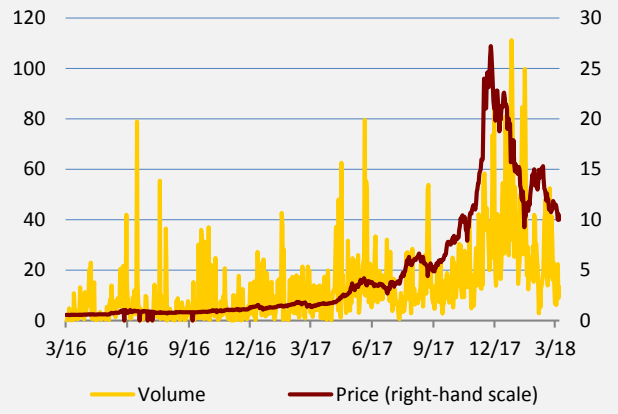
(volume in thousands of bitcoins, price in millions of South Korean wons)



Source: www.bitcoincharts.com
Note: Korbit exchange

Chart 5.2 – Bitcoin trading volumes and prices on the Singaporean cryptocurrency exchange

(volume in bitcoins, price in thousands of Singapore dollars)



Source: www.bitcoincharts.com
Note: FYB exchange

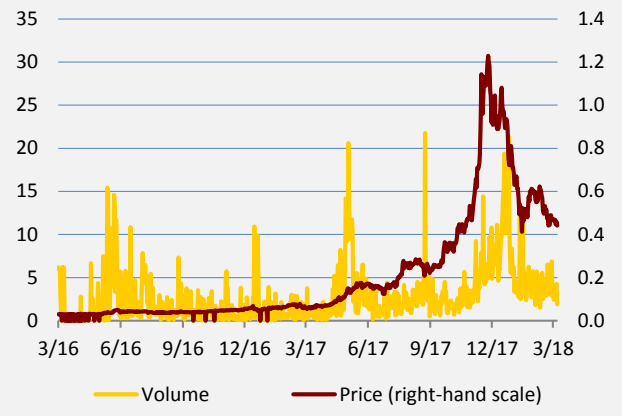
Unlike China, the Russian authorities are not trying to ban ICOs or secondary trading in cryptocurrency outright. Instead, they are trying to regulate them partially, primarily to ensure tax revenue on cryptocurrency transactions. In addition, the public interest in blockchain technology and cryptoassets is inspiring political considerations of a joint cryptocurrency project among the states of the Euro-Asian economic area, or at least flirtations with joining the Venezuelan Petro cryptocurrency project. Meanwhile, private depositors are taking advantage of the regulatory space and increasing their exposures to the relevant markets. According to some data, Russia currently hosts about 20% of the global ICO volume (just behind the USA and China) and Russian start-ups are bypassing traditional bank-loan and venture-capital financing bottlenecks by issuing their own tokens. Russian investors' share of the cryptocurrency market has thus increased. Exact figures on their global share cannot, of course, be determined, but some indirect evidence is provided by the available data on transactions involving the Russian rouble on cryptocurrency exchanges. Chart 6 (using the example of bitcoin) shows that, as in the case of South-East Asia, the rise in the relevant trading volumes coincides with the start of the latest global cryptocurrency fever in 2017. However, not even in the case of Russia can we speak of penetration of cryptocurrency into mass transaction circulation. More likely this is another example of the use of cryptoassets as a substitute for absent functions of the existing national financial sector.

[3] See, for example, https://www.forbes.com/sites/sarahsu/2018/02/07/china-serious-about-ending-icos-cryptocurrency-exchanges/#20fed27c5675.

[4] See https://www.sixthtone.com/news/1001872/artful-asset-exchanges-skirt-chinas-cryptocurrency-ban.

Chart 6 – Conversion between the Russian rouble and bitcoin

(volume in bitcoins, price in millions of roubles)



Source: www.bitcoincharts.com
Note: CEX.IO digital exchange

Who will be the main cryptocurrency investors in the near future?

Cryptocurrency has serious and still unresolved problems from the perspective of a typical investor. First of all, the legal basis for private cryptocurrency issues and transactions is minimal to non-existent (the only exception perhaps being Ripple – see below). This is a crucial factor for serious investors. Furthermore, despite all the claims made by cryptocurrency fans and advocates regarding the benefits of decentralised administration, volunteer transaction verification and the managerial wisdom of the consensus user community in matters of operation and development, this management method suffers from the usual problems of any utopian anarchist group: cumbersome or completely blocked decision-making and schisms by malcontents. Take, for example, the split of Bitcoin Cash from the original bitcoin in summer 2017, caused by a dispute over an increase in the block size limit.

The path to sustained investor interest may lead not through cryptocurrency in the narrow sense, but through digital technologies clearing bottlenecks in the current financial system. One example is Ripple, which started as an attempt to meet a real need – to facilitate peer-to-peer transactions across geographical localities and (at first traditional) currencies – and only later was quite logically complemented with its own cryptocurrency to make accounting easier. Ripple's operators thus actually repeated the path trodden by all existing currencies across history: rather than trying to artificially create new value stored in a currency unit, they merely attempted to express existing value represented by goods and assets. It is not difficult to verify that some sort of spontaneously arising payment system has been at the birth of every currency in history (Ferguson, 2009). Not surprisingly, then, observers see some parallels between Ripple today and the Middle Eastern hawala in the past.

Despite its pragmatic foundations, Ripple shares a number of weaknesses with other cryptocurrencies. For example, like other cryptocurrencies imitating bitcoin, it uses a "community" transaction verification mechanism, which makes virtual assets designed in such a way poorly compatible with the modern mainstream financial industry, which is based on ever faster payments. In this regard, Ripple does not blindly copy the anarcho-libertarian approach of bitcoin and its construction is open to improvement. Nonetheless, the transaction speed of this platform in its current form, though acceptable for peripheral currencies and instruments to some degree, is uncompetitive for the main world markets. At the same time, even Ripple has failed to dodge the speculative waves that have hit other cryptocurrencies, especially the largest wave seen at the end of last year. Gamblers on cryptocurrency markets have evidently been seeking investment opportunities everywhere in this market segment, regardless of the nature of the instrument. In late 2017 and early 2018, Ripple jumped many times more in value than the other well-known objects of cryptofever such as bitcoin and ethereum (see Chart 1). Bitcoin Cash – another currency presenting itself as more user-friendly for retail transactions than the original bitcoin and its imitators – recorded the second-largest exchange rate growth in the same period. This highlights the above-mentioned importance of user-friendliness in the demand for any currency, traditional or digital.

Conclusion

Developments to date do not indicate any substantial crowding out of conventional investment instruments by cryptocurrency. Instead, we can see that cryptoassets have managed to complement the traditional range of securities popular among the most risk-tolerant investors. The opinion – already known at the time cryptocurrency emerged – that such assets (especially bitcoin) are not very appropriate either as a store of value or as a way of making transactions (mainly because of their volatility, concentration and cumbersome verification system – see Yermack, 2013) has not been disproved yet. Like many other assets created by the virtual world at a time of mass enthusiasm for the "new economy" at the turn of the millennium, cryptocurrency does not have an easy-to-identify utility. This, however, is no obstacle to a certain type of investor seeking high-risk speculative purchases. Such investors probably have the same sort of mentality that was attracted to the dot-com bubble at the end of the 1990s and to commodity derivatives a decade later.

This does not mean, though, that new cryptoassets better meeting the requirements of transparency, liquidity and stability will not appear in the future. The solution may involve a closer link to the existing function of money as a store of value, i.e. cryptocurrencies backed by gold and the like. Although opinions on the exact role of policy have yet to take shape, central banks will probably need to

pay attention to this process in the future. The prevailing stance among central bankers is non-recognition of cryptocurrency as money (and hence disagreement with inclusion of the issue in monetary policy considerations). Nevertheless, there is a keen awareness of the risk of virtual assets in general for financial stability (Mersch, 2018).

Today's cryptocurrencies will undoubtedly leave a lasting legacy in the form of blockchain technology, but their viability as an investment instrument turns out to be uncertain. The evolution of demand for bitcoins (especially those still to be mined, at a cost of ever-rising energy consumption and an ever-increasing difficulty of achieving the necessary number of leading zeros in the guessed block hash) speaks clearly: rather than a gateway to a society liberated from the "tyranny" of central banks and the hazard of spendthrift governments, which its die-hard supporters keep talking about, bitcoin will be an exclusive collector's piece – like old works of art or rare jewellery – reserved for the eccentric super-rich.

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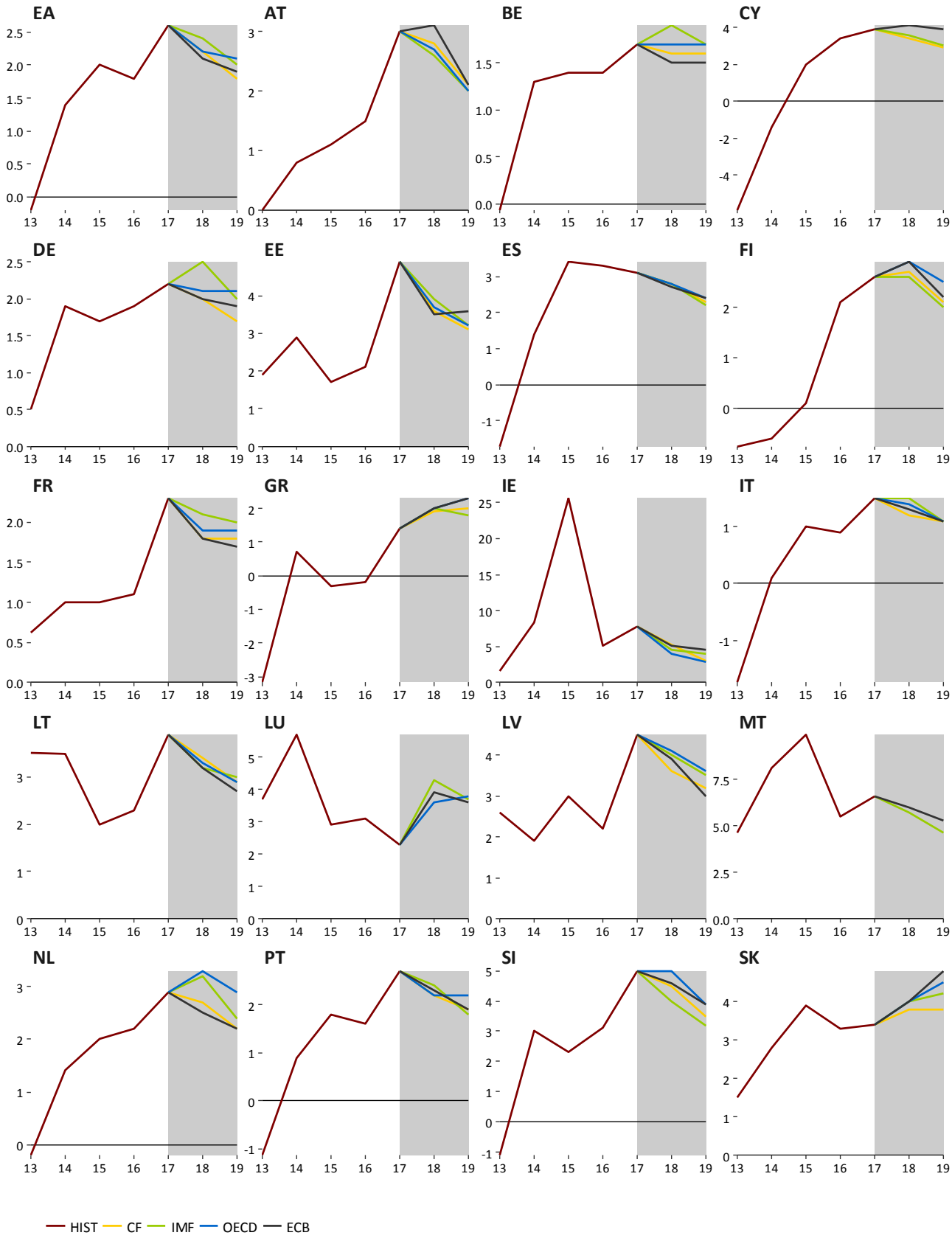
A1. Change in GDP predictions for 2018

	CF		IMF		OECD		CB / EIU	
EA	0	2018/7 2018/6	+0.2	2018/4 2018/1	-0.1	2018/5 2018/3	-0.3	2018/6 2018/3
DE	-0.1	2018/7 2018/6	+0.2	2018/4 2018/1	-0.3	2018/5 2018/3	-0.5	2018/6 2017/12
US	0	2018/7 2018/6	+0.2	2018/4 2018/1	0	2018/5 2018/3	+0.1	2018/6 2018/3
UK	0	2018/7 2018/6	+0.1	2018/4 2018/1	+0.1	2018/5 2018/3	-0.4	2018/5 2018/2
JP	0	2018/7 2018/6	0	2018/4 2018/1	-0.3	2018/5 2018/3	+0.2	2018/4 2018/1
CN	0	2018/7 2018/6	0	2018/4 2018/1	0	2018/5 2018/3	0	2018/6 2018/5
IN	0	2018/7 2018/6	0	2018/4 2018/1	+0.2	2018/5 2018/3	-0.3	2018/5 2018/5
RU	0	2018/6 2018/5	0	2018/4 2018/1	0	2018/5 2018/3	0	2018/5 2018/5
BR	-0.6	2018/6 2018/5	+0.4	2018/4 2018/1	-0.2	2018/5 2018/3	-0.5	2018/6 2018/4

A2. Change in inflation predictions for 2018

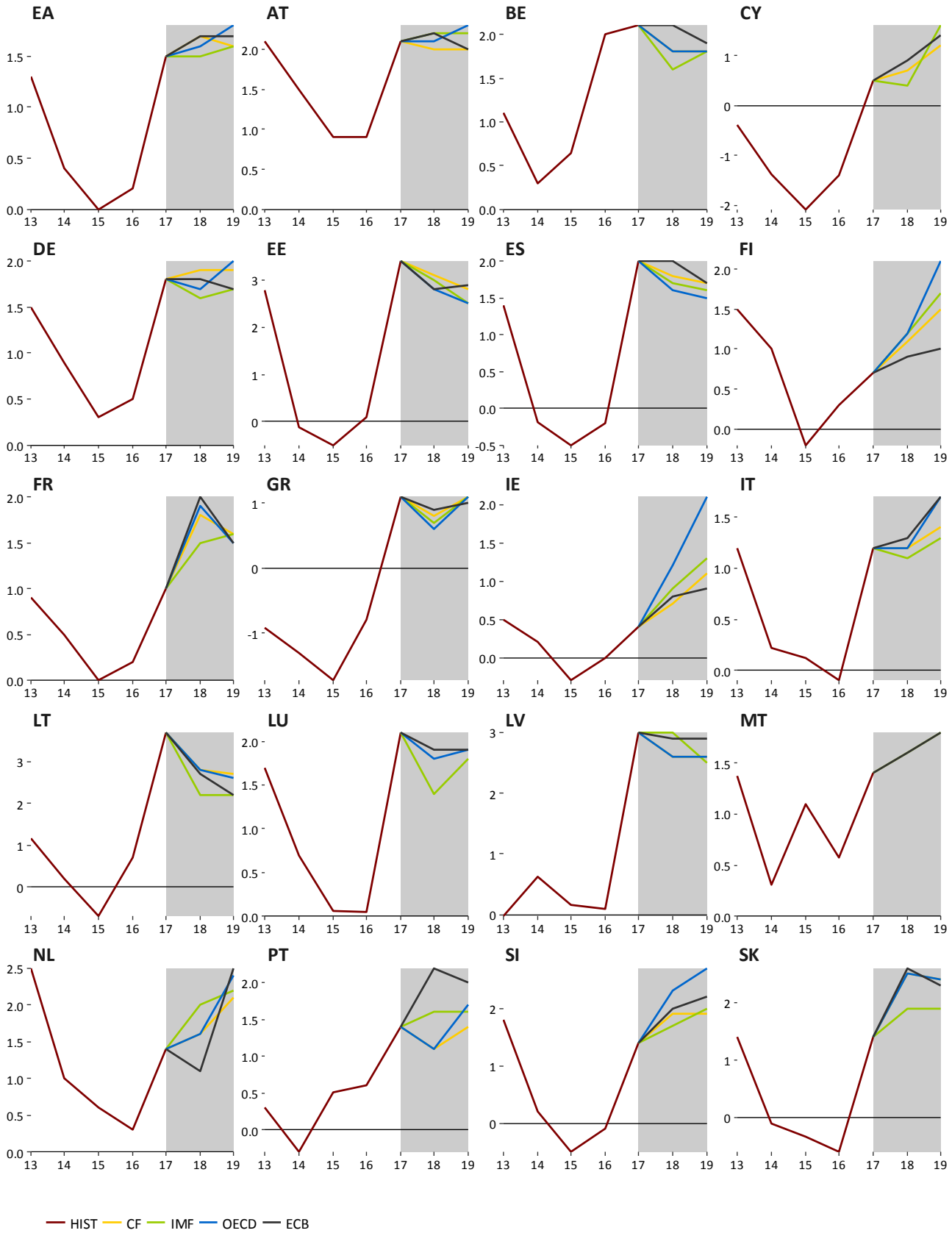
	CF		IMF		OECD		CB / EIU	
EA	+0.1	2018/7 2018/6	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	+0.3	2018/6 2018/3
DE	+0.1	2018/7 2018/6	+0.1	2018/4 2017/10	-0.1	2018/5 2017/11	+0.2	2018/6 2017/12
US	0	2018/7 2018/6	+0.4	2018/4 2017/10	+0.7	2018/5 2017/11	+0.2	2018/6 2018/3
UK	0	2018/7 2018/6	+0.1	2018/4 2017/10	0	2018/5 2017/11	-0.2	2018/5 2018/2
JP	0	2018/7 2018/6	+0.6	2018/4 2017/10	+0.2	2018/5 2017/11	-0.1	2018/4 2018/1
CN	0	2018/7 2018/6	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	-0.2	2018/6 2018/5
IN	+0.1	2018/7 2018/6	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	+0.1	2018/5 2018/5
RU	0	2018/6 2018/5	-1.1	2018/4 2017/10	-0.9	2018/5 2017/11	0	2018/5 2018/5
BR	+0.3	2018/6 2018/5	-0.5	2018/4 2017/10	-0.5	2018/5 2017/11	+0.1	2018/6 2018/4

A3. GDP growth in the euro area countries



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

A4. Inflation in the euro area countries



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

A5. List of abbreviations

AT	Austria
bbl	barrel
BE	Belgium
BoE	Bank of England (the UK central bank)
BoJ	Bank of Japan (the central 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
CBR	Central Bank of Russia
CF	Consensus Forecasts
CN	China
CNB	Czech National Bank
CNY	Chinese renminbi
ConfB	Conference Board Consumer Confidence Index
CXN	Caixin
CY	Cyprus
DBB	Deutsche Bundesbank (the central bank of Germany)
DE	Germany
EA	euro area
ECB	European Central Bank
EE	Estonia
EIA	Energy Information Administration
EIU	Economist Intelligence Unit
ES	Spain
ESI	Economic Sentiment Indicator of the European Commission
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
IFO	Leibniz Institute for Economic Research at the University of Munich
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
NIESR	National Institute of Economic and Social Research (UK)
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
RBI	Reserve Bank of India (central bank)
RU	Russia
RUB	Russian rouble
SI	Slovenia
SK	Slovakia
UK	United Kingdom
UoM	University of Michigan Consumer Sentiment Index - present situation
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	Centre for European Economic Research