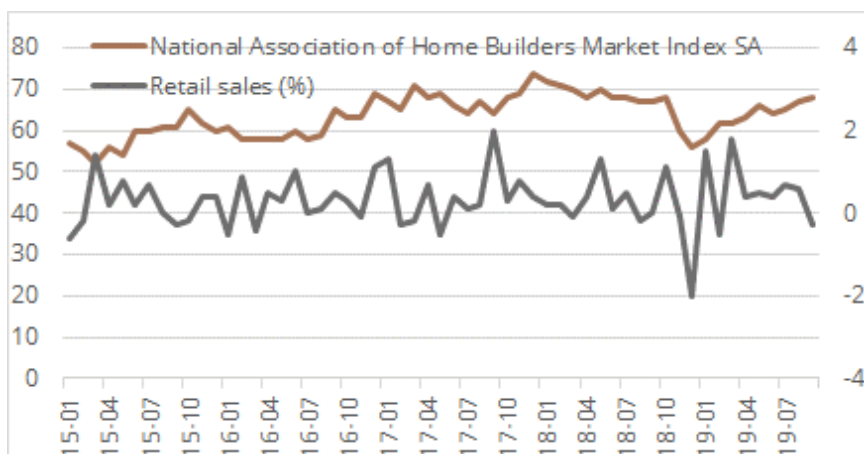


Market Overview

- **Copper:** The last two weeks on the copper market were peaceful. The price of the red metal increased by 3% comparing with the closure a fortnight ago, reaching the price level of around 5800 USD/mt. The increase of the price is stopped by lower and lower economic growth forecast in 2019 (*page 2*).
- **Precious metals:** Gold and silver prices have been steady in the last two weeks. The market is in an overall stagnation as taking into account the positions taken by investors (*page 3*).
- **IMF Conference:** Employees of the Financial and Market Risk Department attended conferences organized by the International Monetary Fund, JP Morgan and Goldman Sachs in Washington. The main topics were increased uncertainty over a GDP growth stability in the world mainly due to the US-China trade war escalation, 2020 USA presidential elections and the role of central banks in the future of global economy (*page 4*).

US consumer economic data is going in opposite directions



Source: Bloomberg, KGHM Polska Miedź






as of: 21st October 2019

Key market prices

	Close price	2w chng.
LME (USD/t)		
▲ Copper	5 751.00	2.2%
▼ Nickel	16 475.00	-8.2%
LBMA (USD/troz)		
▲ Silver	17.44	0.1%
▼ Gold (PM)	1 490.00	-0.7%
FX		
▲ EURUSD	1.1144	1.4%
▼ EURPLN	4.2844	-1.1%
▼ USDPLN	3.8503	-2.5%
▼ USDCAD	1.3132	-1.3%
▼ USDCLP	713.23	-0.3%
Stocks		
▲ KGHM	78.28	1.7%

Source: Bloomberg, KGHM Polska Miedź; (*more on page 8*)

Important macroeconomic data

Release	For	
 GDP (yoy)	3Q	6.0% ▼
 Core CPI (yoy)	Sep	2.4% ▲
 Industr. prod. (wda, yoy)	Aug	-2.8% ▼
 Industrial prod. (yoy)	Aug	-1.8% ▼
 Industr. prod. (wda, yoy)	Aug	-1.8% ▼

Source: Bloomberg, KGHM Polska Miedź; (*more on page 6*)

Market Risk Unit

marketrisk@kgm.com

Base and precious metals | Other commodities

Copper

The last two weeks on the copper market were peaceful. The price of the red metal increased by 3% comparing with the closure a fortnight ago, reaching the price level of around 5800 USD/mt. The increase of the price is stopped by lower and lower economic growth forecast in 2019.

A new satellite-based service providing up to date information of copper smelters activity is being released

Satellites to Spy on Smelters for Copper Traders

A service will launch for funds managers, traders and miners that uses satellites to keep copper smelters under surveillance to get quick word of when they shut down and ramp up.

Britain-based Earth-i, which specialises in geospatial data, aims to sell its SAVANT service to the finance sector since news of a major smelter going off-line or restarting can jolt the copper price.

The new service aims to inform subscribers before smelter firm's make their announcements, which can be delayed by many days even when listed firms are obliged to report. Private firms have no obligation to report smelter activity to the market.

The system, which tracks 100 smelters accounting for 80-90% of global production, combines satellite imagery with artificial intelligence and machine learning to produce its data. System receives all sorts of spurious information that has to filter out, like sunlight being reflected off water. The company had to develop algorithms to deal with those things. Earth-i uses more than 20 high-resolution satellites and launched its own satellite last year capable of collecting high definition colour video.

Other important information on copper market:

- The London Metal Exchange will raise trading and clearing fees by 8% next year following major investments in the bourse, a move that risks reigniting tensions with users who in the past criticized costs. The increase from Jan. 1 will be the first in five years. When Matthew Chamberlain became chief executive officer in 2017, one of his first major initiatives involved appeasing users by cutting trading fees on popular contracts that had been pushed through by his predecessor two years earlier. Higher trading costs a few years ago fuelled a rebellion by users at a time when the bourse was losing market share to other exchanges. The upcoming fee increase is in line with inflation since 2015 and follows investments on infrastructure, regulatory compliance and market initiatives including a responsible sourcing program, the bourse said on Wednesday. "Since our fee recalibration exercise in 2017, where we implemented significant discounts, we have begun to invest in a number of key areas of the business," Chamberlain said in a statement. The new fees are

“fair and proportionate,” he said. The LME is the world’s leading industrial metals exchange, but in the past few years has faced rising competition from rival bourses in New York and Shanghai. Earlier this year, the LME made plans to overhaul its options market after losing ground to competitors, and last month introduced new trading incentives for members.

Precious Metals

Gold and silver prices have been steady in the last two weeks. The market is in an overall stagnation as taking into account the positions taken by investors.

LBMA conference in Shenzhen

Last week there was an annual international precious metals conference organized by LBMA (London Bullion Market Association).

According to conference speakers the main driver of uncertainty is the US-China trade war. Recent data show a small impact of tariffs levied on China by the Trump administration.

In a traditional poll among conference participants, made at the end of the event there was a question about the precious metal with the highest growth potential. 53% of participants pointed at gold as a metal worth increasing its weight in an investment portfolio. Silver had the lowest position – only 12% said that this metal has a potential to have the highest return on investment. The answer to the question about the prices of precious metals during the next year conference planned in Lisbon was different. Gold prices was forecasted by the poll participants at 1666 USD/troz, which is around 12% higher than the price today – close to 1500 USD/troz. Silver price was forecasted at 23 USD/troz, which is an increase of about 25% comparing to levels today, which are below 18 USD/troz.

LBMA conference participants forecast the gold price at 1666 USD/troz and silver price at 23 USD/troz

Global economies | Foreign exchange markets

IMF conference in Washington

Employees of the Financial and Market Risk Department attended conferences organized by the International Monetary Fund (IMF), JP Morgan and Goldman Sachs in Washington. The main topics were increased uncertainty over a GDP growth stability in the world mainly due to the US-China trade war escalation, 2020 USA presidential elections and the role of central banks in the future of global economy.

IMF world GDP growth forecasts has been lowered from 3.2% to 3%

Fears on looming escalation of the US – rest of the world trade dispute and its negative impact of the global economy outlook has prompted the International Monetary Fund to lower the global GDP growth forecasts in 2019 to 3%, the lowest in the decade. For the fifth time in the row IMF has cut the global economy growth rate forecasts in 2019, as a reason stating the slowdown in the global economies related to the international trade tensions. The forecasted growth rate is now equal to 3% comparing to the previous 3,2%. The forecast for 2020 has been also lowered to 3,4% from 3,5%. Investors are waiting for a greater clarity if the current talks between China and US would lead to a breakthrough. In mid-2018, growth forecasts for 2019 amounted to 3.9%, and the difference between previous and new forecasts reflects the impact that the trade war ongoing for several months has on global economy.

The recent partial agreement between the US and China has determined in a major part the aura in which the final agreement is expected. Discussion panels' participants currently opt for a small-steps agreement rather than a one large comprehensive agreement negotiated for a long time. Moreover financial market participants seem to view the agreement in different light than representatives of the world of politics, who stress the long-term aspects where strictly commercial effects are of a secondary importance. The most important US political goal seems to be protecting the data and preventing the Chinese from winning in the fields related to the US national security.

In the case of growth forecasts, central banks and the approach to risk management and capital requirements in banking sector, an attempt to include environmental protection in the above aspects of financial markets is increasingly noticeable in the discussions. The International Monetary Fund probes how to approach the environmental protection in individual countries' economic growth forecasts. Several discussion panels have also touched upon a topic of the possibility of central banks' impact on environmental protection by investing their foreign reserves in green assets. Another idea was to distinguish the interest rate at which banks provide financing according to types of assets - "green" investments would be provided with far more favourable interest rate conditions. The discussion also concerned risk-weighted assets and a possible reduction of capital requirements for "green" investments.

UK and EU has agreed a Brexit deal proposal

Boris Johnson and EU negotiators have a proposal of a Brexit deal, which was voted in the British Parliament on Saturday 19 October. The proposed by Boris Johnson timeline of the deal legal proceedings was rejected.

In a new proposal of a Brexit deal the customs checks will be performed on the Irish Sea

Newly negotiated by the UK Prime Minister Boris Johnson deal sets the framework of the exit of the United Kingdom from the European Union. It differs from the previous deal by solving the Northern Ireland backstop problem. In a new proposal the customs checks will be performed in the ports between the Northern Ireland and the rest of United Kingdom.

The proposed deal is far from perfect and does not include services sector with sufficient detail, while services constitute 80% of the British economy. It is not sure if a detailed deal can be negotiated within the 14 months of transition period.

China wants more talks before signing Trade Deal

China wants to hold more talks this month to hammer out the details of the “phase one” trade deal touted by Donald Trump before Xi Jinping agrees to sign it.

“Phase one” of a trade deal between the US and China requires more talks before its signed

For Xi, it's seen as politically unfeasible to accept a final deal that doesn't remove the punitive tariffs altogether. Nationalists in the Communist Party have pressured him to avoid signing an “unequal treaty” reminiscent of those China signed with colonial powers.

The U.S. must concede on its December tariff threat if they want sign a deal during APEC summit, otherwise it would be a humiliating treaty for China.

Contradictory data from the US economy

US economic data are blatantly contradictory when looking at housing sector and retail sales.

US economy data do not allow to predict the direction the economy is heading to







Housing data out Wednesday reinforced a recent upswing in the industry, but when combined with a surprising decline in retail sales, the reports underscored how difficult it is to predict where the economy is headed. Consumers are at the heart of both figures and Americans' spending currently holds outsize importance for U.S. economic growth.

Looking at Q3, retail sales look fine -- adding to growth -- but looking at Q4 and beyond, I think the picture is weaker,” said Ian Shepherdson, chief economist at Pantheon Macroeconomics. U.S. retail sales posted the first decline in seven months, falling 0.3% in September as a setback in auto sales depressed the headline number.

The report on retail sales helped strengthen bets that the Fed will cut interest rates again when policy makers meet Oct. 29-30 in Washington.

Macroeconomic calendar

Important macroeconomic data releases

Weight	Date	Event	For	Reading ¹	Previous	Consensus ²	
China							
🔴🔴	14-Oct	Trade balance (USD bn)‡	Sep	39.7 ▲	34.8	34.8	🟢
🔴🔴	14-Oct	Exports (yoy)	Sep	-3.2% ▼	-1.0%	-2.8%	🔴
🔴🔴🔴🔴	15-Oct	Consumer inflation CPI (yoy)	Sep	3.0% ▲	2.8%	2.9%	🟢
🔴🔴	15-Oct	Producer inflation PPI (yoy)	Sep	-1.2% ▼	-0.8%	-1.2%	🟡
🔴	15-Oct	New yuan loans (CNY bn)	Sep	1 690 ▲	1 210	1 360	🟢
🔴🔴🔴🔴🔴	18-Oct	GDP (yoy)	3Q	6.0% ▼	6.2%	6.1%	🔴
🔴🔴🔴🔴🔴	18-Oct	GDP (sa, qoq)	3Q	1.5% ▼	1.6%	1.5%	🟡
🔴🔴🔴🔴	18-Oct	Industrial production (yoy)	Sep	5.8% ▲	4.4%	4.9%	🟢
🔴🔴	18-Oct	Fixed assets investments (ytd, yoy)	Sep	5.4% ▼	5.5%	5.5%	🔴
🔴	18-Oct	Retail sales (yoy)	Sep	7.8% ▲	7.5%	7.8%	🟡
Poland							
🔴🔴	14-Oct	Trade balance (EUR mn)‡	Aug	- 55.0 ▲	- 345	- 440	🟢
🔴🔴	14-Oct	Exports (EUR mn)‡	Aug	17 646 ▼	19 286	17 650	🔴
🔴🔴	14-Oct	Current account balance (EUR mn)‡	Aug	- 606 ▲	- 797	- 568	🔴
🔴🔴🔴🔴	15-Oct	Consumer inflation CPI (yoy) - final data	Sep	2.6% -	2.6%	--	🟡
🔴🔴🔴🔴	16-Oct	Core CPI (excluding food and energy, yoy)	Sep	2.4% ▲	2.2%	2.3%	🟢
🔴🔴	17-Oct	Average gross salary (yoy)	Sep	6.6% ▼	6.8%	7.1%	🔴
🔴	17-Oct	Employment (yoy)	Sep	2.6% -	2.6%	2.6%	🟡
🔴🔴🔴🔴	18-Oct	Sold industrial production (yoy)	Sep	5.6% ▲	-1.3%	5.0%	🟢
🔴🔴	18-Oct	Producer inflation PPI (yoy)‡	Sep	0.9% -	0.9%	0.5%	🟢
US							
🔴🔴🔴🔴	10-Oct	Consumer inflation CPI (mom)	Sep	0.0% ▼	0.1%	0.1%	🔴
🔴🔴🔴🔴	10-Oct	Consumer inflation CPI (yoy)	Sep	1.7% -	1.7%	1.8%	🔴
🔴🔴	11-Oct	University of Michigan confidence index - preliminary data	Oct	96.0 ▲	93.2	92.0	🟢
🔴🔴	16-Oct	Retail sales (excluding autos, mom)‡	Sep	-0.1% ▼	0.2%	0.2%	🔴
🔴🔴🔴🔴	17-Oct	Industrial production (mom)‡	Sep	-0.4% ▼	0.8%	-0.2%	🔴
🔴🔴	17-Oct	Philadelphia Fed business outlook	Oct	5.6 ▼	12.0	7.6	🔴
🔴	17-Oct	Capacity utilization	Sep	77.5% ▼	77.9%	77.7%	🔴
Eurozone							
🔴🔴🔴🔴	14-Oct	Industrial production (sa, mom)	Aug	0.4% ▲	-0.4%	0.3%	🟢
🔴🔴🔴🔴	14-Oct	Industrial production (wda, yoy)‡	Aug	-2.8% ▼	-2.1%	-2.5%	🔴
🔴	15-Oct	ZEW survey expectations	Oct	- 23.5 ▼	- 22.4	--	🟡
🔴🔴🔴🔴	16-Oct	Consumer inflation CPI (yoy) - final data	Sep	0.8% ▼	0.9%	0.9%	🔴
🔴🔴🔴🔴	16-Oct	Core CPI (yoy) - final data	Sep	1.0% -	1.0%	1.0%	🟡
🔴	16-Oct	Trade balance (EUR mn)	Aug	14.7 ▼	24.8	--	🟡
Germany							
🔴🔴🔴	07-Oct	Factory orders (wda, yoy)‡	Aug	-6.7% ▼	-5.0%	-6.4%	🔴
🔴🔴🔴🔴	08-Oct	Industrial production (wda, yoy)‡	Aug	-4.0% ▼	-3.9%	-4.3%	🟢
🔴🔴🔴🔴	11-Oct	Harmonized consumer inflation HICP (yoy) - final data	Sep	0.9% -	0.9%	0.9%	🟡
🔴🔴🔴🔴	11-Oct	Consumer inflation CPI (yoy) - final data	Sep	1.2% -	1.2%	1.2%	🟡
France							
🔴🔴🔴🔴	10-Oct	Industrial production (yoy)‡	Aug	-1.4% ▼	0.0%	0.1%	🔴
🔴🔴🔴🔴	15-Oct	Harmonized consumer inflation HICP (yoy) - final data	Sep	1.1% -	1.1%	1.1%	🟡
🔴🔴🔴🔴	15-Oct	Consumer inflation CPI (yoy) - final data	Sep	0.9% -	0.9%	0.9%	🟡

Weight	Date	Event	For	Reading ¹	Previous	Consensus ²
Italy						
★★★★	10-Oct	Industrial production (wda, yoy)	Aug	-1.8% ▼	-0.7%	-1.8% ○
★★★★	16-Oct	Harmonized consumer inflation HICP (yoy) - final data	Sep	0.2% ▼	0.3%	0.3%
UK						
★★★★	10-Oct	Industrial production (yoy)‡	Aug	-1.8% ▼	-1.1%	-0.8% ◡
★★	15-Oct	Unemployment rate (ILO, 3-months)	Aug	3.9% ▲	3.8%	3.8% ◢
★★★★	16-Oct	Consumer inflation CPI (yoy)	Sep	1.7% -	1.7%	1.8% ◡
Japan						
★★★★	15-Oct	Industrial production (yoy) - final data	Aug	-4.7% -	-4.7%	--
★★★★	18-Oct	Consumer inflation CPI (yoy)	Sep	0.2% ▼	0.3%	0.2% ○
Chile						
★★★	07-Oct	Copper exports (USD mn)	Sep	2 763 ▼	3 068	--
★★	07-Oct	Nominal wages (yoy)	Aug	5.1% ▲	5.0%	--
Canada						
★★★	11-Oct	Net change in employment (ths)	Sep	53.7 ▼	81.1	7.5 ◢
★★★★	16-Oct	Consumer inflation CPI (yoy)	Sep	1.9% -	1.9%	2.1% ◡

¹ Reading difference to previous release: ▲ = higher than previous; ▼ = lower than previous; == = equal to previous.

² Reading difference to consensus: ◢ = higher than consensus; ◡ = lower than consensus; ○ = equal to consensus.

mom = month-on-month; yoy = year-on-year; qoq = quarter on quarter; ytd year-to-date; sa = seasonally adjusted; wda = working days adjusted; ‡ = previous data after revision.

Source: Bloomberg, KGHM Polska Miedź

Key market data

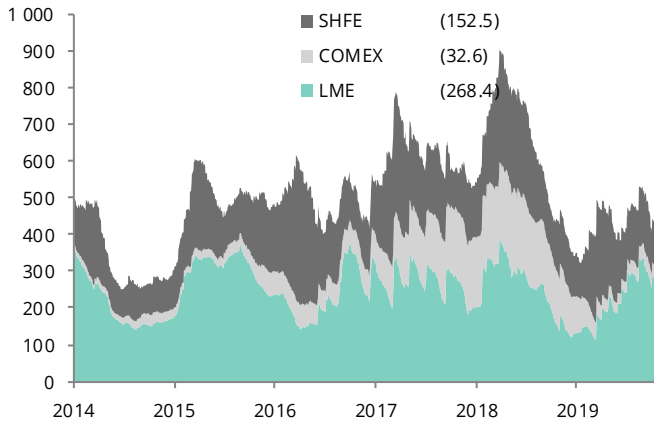
Key base & precious metal prices, exchange rates and other important market factors

<i>(as of: 18-Oct-19)</i>		Price change ¹					From year beginning ²		
	Price	2W	QTD	YTD	1Y	Average	Min	Max	
LME (USD/t; Mo in USD/lbs)									
Copper	5 751.00	▲ 2.2%	▲ 0.4%	▼ -3.6%	▼ -6.4%	6 014.93	5 537.00	6 572.00	
Molybdenum	10.95	▼ -4.5%	▼ -7.0%	-	-	11.98	10.95	12.70	
Nickel	16 475.00	▼ -8.2%	▼ -6.2%	▲ 55.5%	▲ 35.7%	13 700.32	10 440.00	18 625.00	
Aluminum	1 729.00	▲ 0.9%	▲ 1.5%	▼ -7.5%	▼ -13.9%	1 798.01	1 697.00	1 923.00	
Tin	16 875.00	▲ 2.0%	▲ 5.1%	▼ -13.5%	▼ -12.0%	19 114.75	15 710.00	21 925.00	
Zinc	2 489.00	▲ 7.0%	▲ 4.7%	▼ -0.9%	▼ -7.4%	2 585.25	2 211.00	3 018.00	
Lead	2 211.00	▲ 1.1%	▲ 6.0%	▲ 10.1%	▲ 11.0%	1 995.76	1 768.00	2 211.00	
LBMA (USD/troz)									
Silver	17.44	▲ 0.1%	▲ 1.0%	▲ 12.7%	▲ 20.1%	15.95	14.38	19.31	
Gold ²	1 490.00	▼ -0.7%	▲ 0.3%	▲ 16.3%	▲ 21.8%	1 372.60	1 269.50	1 546.10	
LPPM (USD/troz)									
Platinum ²	886.00	▲ 0.1%	▼ -1.6%	▲ 11.6%	▲ 7.0%	851.50	782.00	977.00	
Palladium ²	1 763.00	▲ 6.1%	▲ 5.3%	▲ 39.6%	▲ 64.0%	1 469.76	1 267.00	1 763.00	
FX ³									
EURUSD	1.1144	▲ 1.4%	▲ 2.3%	▼ -2.7%	▼ -3.1%	1.1221	1.0889	1.1535	
EURPLN	4.2844	▼ -1.1%	▼ -2.0%	▼ -0.4%	▼ -0.3%	4.3036	4.2406	4.3891	
USDPLN	3.8503	▼ -2.5%	▼ -3.7%	▲ 2.4%	▲ 3.2%	3.8356	3.7243	4.0154	
USDCAD	1.3132	▼ -1.3%	▼ -0.8%	▼ -3.7%	▲ 0.6%	1.3290	1.3038	1.3600	
USDCNY	7.0817	▼ -0.9%	▼ -0.9%	▲ 3.0%	▲ 2.1%	6.8770	6.6872	7.1789	
USDCLP	713.23	▼ -0.3%	▼ -1.7%	▲ 2.7%	▲ 6.4%	687.99	649.22	729.38	
Money market									
3m LIBOR USD	1.953	▼ -0.06	▼ -0.13	▼ -0.85	▼ -0.52	2.429	1.953	2.804	
3m EURIBOR	-0.407	▲ 0.02	▲ 0.01	▼ -0.10	▼ -0.09	-0.347	-0.448	-0.306	
3m WIBOR	1.710	▼ -0.01	▼ -0.01	▼ -0.01	▼ -0.01	1.720	1.710	1.720	
5y USD interest rate swap	1.564	▲ 0.18	▲ 0.06	▼ -1.01	▼ -1.62	2.039	1.254	2.715	
5y EUR interest rate swap	-0.265	▲ 0.15	▲ 0.14	▼ -0.46	▼ -0.63	-0.124	-0.553	0.222	
5y PLN interest rate swap	1.750	▲ 0.15	▲ 0.10	▼ -0.37	▼ -0.85	1.892	1.440	2.240	
Fuel									
WTI Cushing	53.78	▲ 2.0%	▼ -0.5%	▲ 18.4%	▼ -21.7%	56.81	46.54	66.40	
Brent	58.96	▲ 0.6%	▼ -1.5%	▲ 10.9%	▼ -25.7%	64.18	53.83	73.89	
Diesel NY (ULSD)	195.96	▲ 2.2%	▲ 2.8%	▲ 16.5%	▼ -14.6%	193.46	170.01	212.40	
Others									
VIX	14.25	▼ -3.61	▼ -1.99	▼ -11.17	▼ -5.81	15.93	12.01	25.45	
BBG Commodity Index	78.67	▲ 1.2%	▲ 1.1%	▲ 2.5%	▼ -8.3%	79.47	75.97	83.06	
S&P500	2 986.20	▲ 1.6%	▲ 0.3%	▲ 19.1%	▲ 7.9%	2 862.16	2 447.89	3 025.86	
DAX	12 633.60	▲ 4.4%	▲ 1.7%	▲ 19.6%	▲ 9.0%	11 866.27	10 416.66	12 670.11	
Shanghai Composite	2 938.14	▲ 1.1%	▲ 1.1%	▲ 17.8%	▲ 18.2%	2 912.86	2 464.36	3 270.80	
WIG 20	2 164.75	▲ 2.0%	▼ -0.4%	▼ -4.9%	▼ -1.1%	2 268.75	2 051.44	2 414.41	
KGHM	78.28	▲ 1.7%	▼ -2.2%	▼ -11.9%	▼ -7.0%	93.22	73.76	112.00	

^o change over: 2W = two weeks; QTD = quarter-to-day; YTD = year-to-date; 1Y = one year. ¹ based on daily closing prices. ² latest quoted price. ³ central banks' fixing rates (Bank of China HK for USD/CNY). ⁴

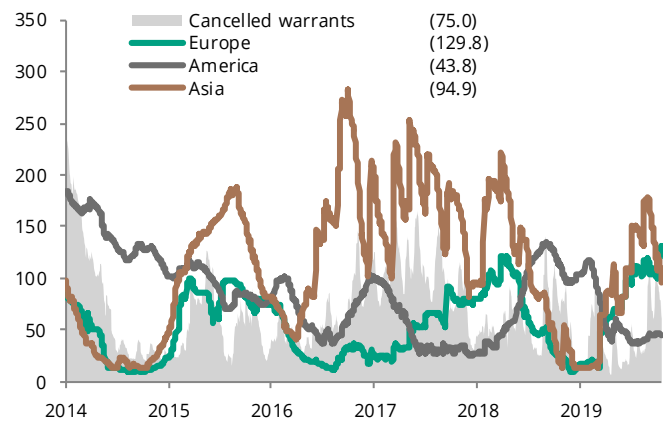
Source: Bloomberg, KGHM Polska Miedź

Copper: official exchange stocks (thousand tonnes)



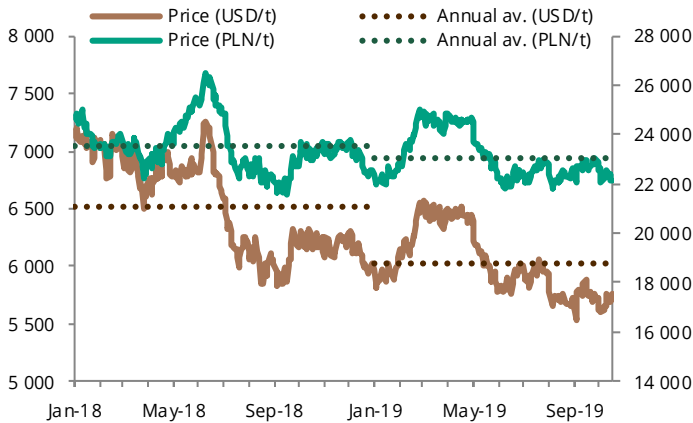
Note: Latest values in brackets. Source: Bloomberg, KGHM

Copper: official LME stocks (thousand tonnes)



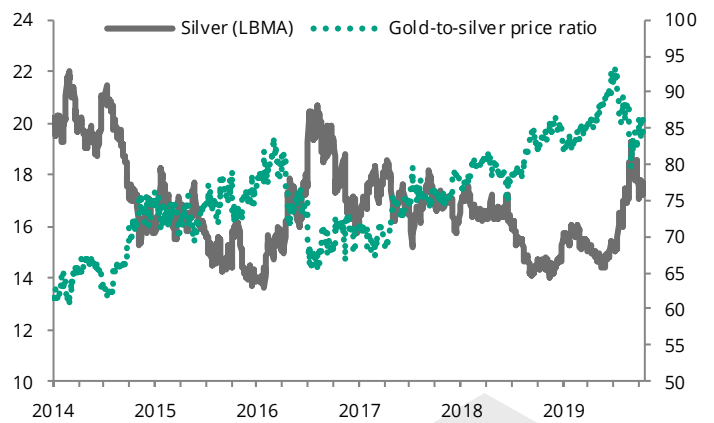
Note: Latest values in brackets. Source: Bloomberg, KGHM

Copper: price in USD (lhs) and PLN (rhs) per tonne



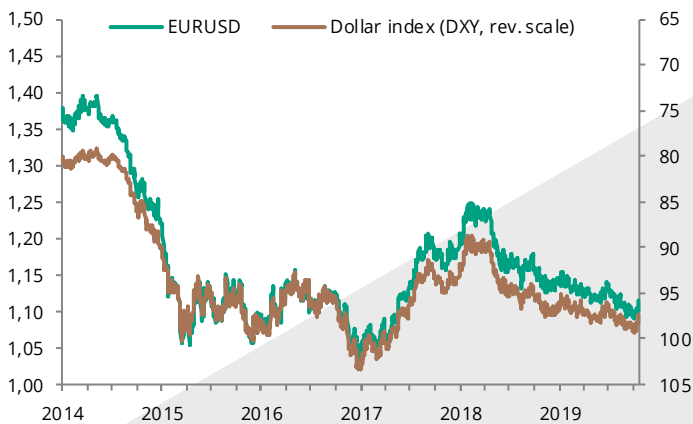
Source: Bloomberg, KGHM Polska Miedź

Silver: price (lhs) and gold ratio (rhs)



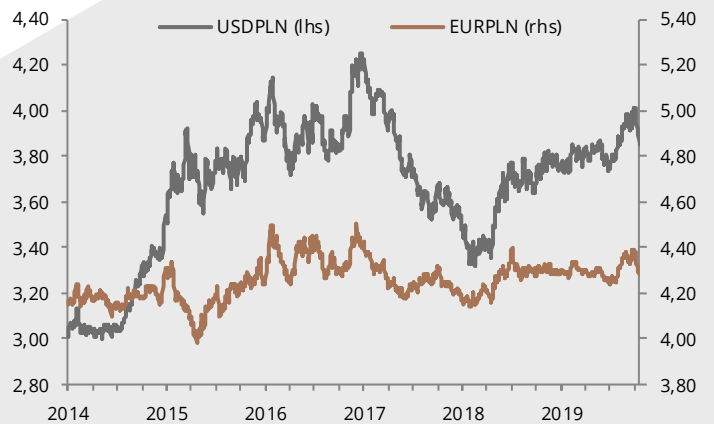
Source: Bloomberg, KGHM Polska Miedź

USD: dollar index (lhs) and ECB-based EURUSD (rhs)



Source: Bloomberg, KGHM Polska Miedź

PLN: NBP-fixing based rate vs. USD (lhs) and EUR (rhs)



Source: Bloomberg, KGHM Polska Miedź

Legal note

This document has been prepared based on the below listed reports, among others, published in the following period:
7th – 20th October 2019.

- Barclays Capital, ▪ BofA Merrill Lynch, ▪ Citi Research, ▪ CRU Group, ▪ Deutsche Bank Markets Research,
- GavekalDragonomics, ▪ Goldman Sachs, ▪ JPMorgan, ▪ Macquarie Capital Research, ▪ Mitsui Bussan Commodities,
- Morgan Stanley Research, ▪ SMM Information & Technology, ▪ Sharps Pixley.

Moreover, additional information published here was acquired in direct conversations with market dealers, from financial institution reports and from the following websites: ▪ thebulliondesk.com, ▪ lbma.org.uk, ▪ lme.co.uk, ▪ metalbulletin.com, ▪ nbp.pl, , also: Bloomberg and Thomson Reuters.

Official metals prices are available on following websites:

- base metals: www.lme.com/dataprices_products.asp (charge-free logging)
- silver and gold: www.lbma.org.uk/pricing-and-statistics
- platinum and palladium: www.lppm.com/statistics.aspx

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