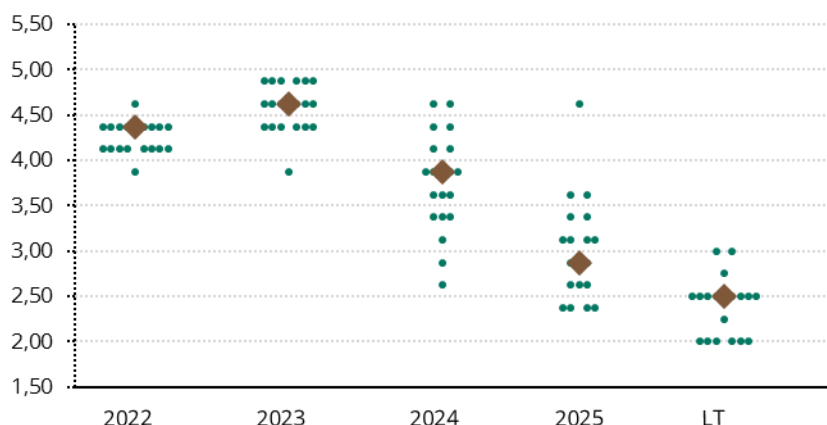


Market Overview

- **Copper:** Copper prices typically react to the ebb and flow of demand in China, which accounts for half of global consumption. But this time the focus is on Europe, accounting for 15%-20% of global demand for copper, region which is currently facing serious energy crisis (*page 2*).
- **Precious metals:** The amount of silver used in solar cell production will exceed 3,900t (126Moz) this year. To put this into context, this will account for almost 25% of total silver industrial demand (*page 4*).
- **USA:** The target for the benchmark federal funds rate has been lifted to a range of 3% to 3.25%. Officials forecast that rates would reach 4.4% by the end of this year and 4.6% in 2023 (*page 5*).

FOMC members median in September 2022 (%)



Source: Bloomberg, KGHM Polska Miedź S.A.





as of: 26th September 2022

Key market prices

	Close price	2w chng.
LME (USD/t)		
▼ Copper	7 446.00	-6.8%
▲ Nickel	23 135.00	4.2%
LBMA (USD/troz)		
▲ Silver	19.00	1.3%
▼ Gold (PM)	1 643.55	-4.1%
FX		
▼ EURUSD	0.9754	-2.9%
▲ EURPLN	4.7591	1.0%
▲ USDPLN	4.8796	4.7%
▲ USDCAD	1.3570	4.1%
▲ USDCLP	943.07	7.0%
Stocks		
▼ KGHM	85.00	-8.5%

Source: Bloomberg, KGHM Polska Miedź S.A.; (*more on page 9*)

Important macroeconomic data

Release	For	
 Fed upper rate	Sep	3.25% ▲
 Industrial prod. (yoy)	Aug	4.2% ▲
 Industrial prod. (yoy)	Aug	10.9% ▲
 Manufacturing PMI	Sep	48.5 ▼
 Industrial prod. (yoy)	Jul	1.1% ▼

Source: Bloomberg, KGHM Polska Miedź S.A.; (*more on page 7*)

Market Risk Unit

marketrisk@kgm.com

Base and precious metals | Other commodities

Copper

Europe Upstages China As Main Driver For Copper Outlook

Copper prices typically react to the ebb and flow of demand in China, which accounts for half of global consumption. But this time the focus is on Europe, accounting for 15%-20% of global demand for copper, region which is currently facing serious energy crisis.

Macquarie analysts expect a copper market surplus of 691,000 tonnes in 2023 from a 162,000 tonne deficit this year

Shrinking copper demand in Europe due to a manufacturing recession caused by the energy crisis will dominate market sentiment for some time with prices likely to retreat towards two-year lows early next year. Copper prices typically react to the ebb and flow of demand in China, which accounts for half of global consumption estimated at around 25 million tonnes this year. But this time the focus is on Europe, accounting for 15%-20% of global demand for copper used in power and construction. The region is facing surging gas and power prices after energy supply cuts from the Russian direction. The European Union has made proposals to impose mandatory targets on member countries to cut power consumption. "It would be rare to see an outright decline in demand, but I think that's what we are going to see in Europe over the next 3-6 months," said Citi analyst Max Layton. "There will be a very substantial seasonal surplus between December and March, the combination of which is going to bring copper down to 6,600." Benchmark copper prices on the London Metal Exchange (LME) fell to \$6,955 a tonne in July, the lowest since November 2020 when COVID lockdowns hit manufacturing activity around the world. Weak copper demand means surpluses. Macquarie analysts expect a copper market surplus of 691,000 tonnes in 2023 from a 162,000 tonne deficit this year. They expect global refined copper production at more than 26 million tonnes in 2023. "The economic outlook ex-China has worsened, particularly in Europe due to the ongoing energy crisis," said Macquarie analyst Marcus Garvey. "We do not think China will be able to offset the slowdown elsewhere. Inventories will build next year, but how much will be visible is difficult to say." Copper stocks in LME and CME Group registered warehouses and in those monitored by the Shanghai Futures Exchange are visible and total around 189,000 tonnes. Low stocks in exchange warehouses have supported copper prices, while worries about supplies on the LME have also created a hefty premium for the cash over the three month contract. Invisible inventories include those held by producers, traders and state stockpiles such as those held by China. Modelling by Citi analysts shows invisible stocks outside China could total around 500,000 tonnes.

Other important information on copper market:

- China's refined copper output reached 917,000 mt in August, up 3.9% year on year and 5.4% higher on the month, data from the National Bureau of Statistics showed Sept. 21. The output rise was lower than market expectations, as some smelters curbed production due to power shortages and reemerging COVID-19 cases, sources said. China's refined copper output is expected to keep rising in September, as smelters started resuming production following the easing of power supply. However, tight supply of copper scrap and blister copper could hit production of domestic smelters to some extent, they added.
- The world refined copper deficit in 2022 grew to 126,000 mt through July from 72,000 mt in June even as usage slid, the International Copper Study Group said Sept. 21. Refined copper production in July totaled 2.13 million mt, short of 2.16 million mt of reported usage. Production and usage slipped about 1% and 4% from June, respectively. Through the first seven months of the year, ICSG said refined copper production increased by about 3% year over year to 14.80 million mt while usage grew by about 2.5% in the same comparison to 14.92 million mt. The rise in output was mainly attributed to primary production as secondary production decreased by 2%. Refined copper output notably increased 2% in China, 1.9% in Japan and 20% in the Democratic Republic of Congo but dropped 2% in Chile during the first seven months of the year. Meanwhile world apparent refined copper usage year-to-date rose 3% in China and 1.8% ex-China through July. Global copper mine production during the first seven months of the year increased about 3% year over year to 12.47 million mt, with output growing in Indonesia, the DRC, Mexico and the US. However, mine output fell 6% in Chile, the world's largest copper mine producing country. In Peru, the world's second largest copper mine producing country, an increase in mined copper production was limited to 1.5%.
- Glencore will buy Newmont Corp's stake in the MARA copper-gold project in Argentina's Catamarca province for up to \$174.9 million. Including Newmont's 18.75% stake, Glencore will own 43.75% of the Minera Agua Rica Alumbraera (MARA) project after the deal closes, while Canadian miner Yamana Gold Inc will continue being the operator and own the rest of it. Glencore will pay \$124.9 million upfront and up to \$50 million in deferred payment for the stake. The three companies formed the MARA joint venture in December 2020. The asset has proven and probable mineral reserves of 5.4 million tonnes of copper and 7.4 million ounces of gold, with an initial mine life of 28 years.

Precious Metals

Silver demand for solar panels is expected to grow by 15% in 2022

The amount of silver used in solar cell production will exceed 3,900t (126Moz) this year. To put this into context, this will account for almost 25% of total silver industrial demand.

Global PV capacity expected to surpass 200GW for the first time in 2022

According to Metals Focus, global renewable energy sector benefited from the ongoing energy crisis, which is especially important in the context of precious metals demand. The consultancy said that photovoltaic (PV) systems are set to break installation records in 2022 as the Russia-Ukraine conflict highlighted the need for a more rapid transition to clean energy. For example, Europe has decided to secure energy sovereignty by cutting its reliance on Russian fossil fuels by 2027 amid soaring electricity prices, with a cumulative solar deployment target of 320GW by 2025. "We have already seen at least 24 countries reach the 1GW-scale of new annual capacity, with global PV capacity expected to surpass 200GW for the first time in 2022. This compares with 116GW in 2019," Metals Focus added. According to Metals Focus' statistics, the amount of silver used in solar cell production will exceed 3,900t (126Moz) this year, up 15% y/y. To put this into context, this will account for almost 25% of total silver industrial demand (forecast at 533Moz for this year). Overall, the consultancy expects that the steadily growing PV market, coupled with further expansion of the 5G infrastructure and the growing trend of automotive electrification, will help support silver offtake in the electronics sector.

Global economies | Foreign exchange markets

Powell Signals More Pain to Come With Fed Sending Rates Higher

The target for the benchmark federal funds rate has been lifted to a range of 3% to 3.25%. Officials forecast that rates would reach 4.4% by the end of this year and 4.6% in 2023.






Powell and his colleagues are determined to bring inflation down to the Fed's 2% goal







Federal Reserve Chair Jerome Powell vowed officials would crush inflation after they raised interest rates by 75 basis points for a third straight time and signaled even more aggressive hikes ahead than investors had expected. "We have got to get inflation behind us. I wish there were a painless way to do that. There isn't," Powell told a press conference in Washington on Wednesday (Sep 21) after officials lifted the target for the benchmark federal funds rate to a range of 3% to 3.25%. "Higher interest rates, slower growth and a softening labor market are all painful for the public that we serve. But they're not as painful as failing to restore price stability and having to come back and do it down the road again," he said. The S&P 500 stock index ended near session lows. Yields on the two-year Treasury note topped 4%, piercing that mark for the first time since 2007. The dollar rallied. Officials forecast that rates would reach 4.4% by the end of this year and 4.6% in 2023, a more hawkish shift in their so-called dot plot than anticipated. That implies a fourth-straight 75 basis-point hike could be on the table for the next gathering in November, about a week before the US midterm elections. The Fed chief agreed that the median of quarterly projections submitted by policy makers implied a further 125 basis points of tightening this year. But he said there had been no decision taken on the size of the rate increase at the next meeting and stressed that a fairly large group of officials preferred to only lift rates by a percentage point by year end. Powell said his main message was that he and his colleagues were determined to bring inflation down to the Fed's 2% goal they "will keep at it until the job is done." That was a strong signal that officials would not hesitate to raise rates by more than they currently expect if that's what it takes to cool inflation. Further ahead, rates were seen stepping down to 3.9% in 2024 and 2.9% in 2025, their projections showed. The updated forecasts showed unemployment rising to 4.4% by the end of next year and the same at the end of 2024 -- up from 3.9% and 4.1%, respectively, in the June projections. The Fed's quarterly projections, which showed a steeper rate path than officials laid out in June, underscore the Fed's resolve to cool inflation despite the risk that surging borrowing costs could tip the US into recession. Powell and his colleagues, slammed for a slow initial response to escalating price pressures, have pivoted aggressively to catch up and are now delivering the most aggressive policy tightening since the Fed under Volcker four decades ago. Estimates for economic growth in 2023 were marked down to 1.2% and 1.7% in 2024, reflecting a bigger impact from tighter monetary policy. Inflation peaked at 9.1% in June, as measured by the 12-month change in the US consumer price index. But it's failed to come down as quickly in recent months as Fed officials had hoped: In August, it was still 8.3%. Job growth, meanwhile, has remained

robust and the unemployment rate, at 3.7%, is still below levels most Fed officials consider to be sustainable in the longer run. The failure of the labor market to soften has added to the impetus for a more-aggressive tightening path at the US central bank. Fed action is also taking place against the backdrop of tightening by other central banks to confront price pressures which have spiked around the globe. Collectively, about 90 have raised interest rates this year, and half of them have hiked by at least 75 basis points in one shot.

Macroeconomic calendar

Important macroeconomic data releases

Weight	Date	Event	For	Reading ¹	Previous	Consensus ²	
China							
⊕⊕⊕⊕	16-Sep	Industrial production (yoy)	Aug	4.2% ▲	3.8%	3.8%	▲
⊕⊕	16-Sep	Fixed assets investments (ytd, yoy)	Aug	5.8% ▲	5.7%	5.5%	▲
⊕	16-Sep	Retail sales (yoy)	Aug	5.4% ▲	2.7%	3.3%	▲
Poland							
⊕⊕	13-Sep	Trade balance (EUR mn)	Jul	-1 452 ▼	- 849	-1 271	▼
⊕⊕	13-Sep	Exports (EUR mn)	Jul	26 010 ▼	28 076	26 604	▼
⊕⊕	13-Sep	Current account balance (EUR mn)	Jul	-1 735 ▼	-1 468	-1 779	▲
⊕⊕⊕⊕	15-Sep	Consumer inflation CPI (yoy) - final data	Aug	16.1% -	16.1%	--	
⊕⊕⊕⊕	16-Sep	Core CPI (excluding food and energy, yoy)	Aug	9.9% ▲	9.3%	9.9%	○
⊕⊕⊕⊕	20-Sep	Sold industrial production (yoy)‡	Aug	10.9% ▲	7.1%	10.0%	▲
⊕⊕	20-Sep	Average gross salary (yoy)	Aug	12.7% ▼	15.8%	13.7%	▼
⊕⊕	20-Sep	Producer inflation PPI (yoy)‡	Aug	25.5% -	25.5%	24.5%	▲
⊕	20-Sep	Employment (yoy)	Aug	2.4% ▲	2.3%	2.4%	○
⊕⊕⊕	21-Sep	Retail sales (yoy)	Aug	21.5% ▲	18.4%	20.0%	▲
⊕	22-Sep	M3 money supply (yoy)	Aug	7.4% ▲	6.2%	6.1%	▲
⊕⊕	23-Sep	Unemployment rate	Aug	4.8% ▼	4.9%	4.9%	▼
US							
⊕⊕⊕⊕	13-Sep	Consumer inflation CPI (mom)	Aug	0.1% ▲	0.0%	-0.1%	▲
⊕⊕⊕⊕	13-Sep	Consumer inflation CPI (yoy)	Aug	8.3% ▼	8.5%	8.1%	▲
⊕⊕⊕⊕	15-Sep	Industrial production (mom)‡	Aug	-0.2% ▼	0.5%	0.0%	▼
⊕⊕	15-Sep	Philadelphia Fed business outlook	Sep	- 9.9 ▼	6.2	2.3	▼
⊕⊕	15-Sep	Retail sales (excluding autos, mom)‡	Aug	-0.3% ▼	0.0%	0.0%	▼
⊕	15-Sep	Capacity utilization‡	Aug	80.0% ▼	80.2%	80.2%	▼
⊕⊕	16-Sep	University of Michigan confidence index - preliminary data	Sep	59.5 ▲	58.2	60.0	▼
⊕⊕⊕⊕⊕	21-Sep	FOMC base rate decision - upper bound (Fed)	Sep	3.25% ▲	2.50%	3.25%	○
⊕⊕⊕⊕⊕	21-Sep	FOMC base rate decision - lower bound (Fed)	Sep	3.00% ▲	2.25%	3.00%	○
⊕⊕⊕	23-Sep	Composite PMI - preliminary data	Sep	49.3 ▲	44.6	46.1	▲
⊕⊕⊕	23-Sep	Manufacturing PMI - preliminary data	Sep	51.8 ▲	51.5	51.0	▲
⊕⊕⊕	23-Sep	PMI services - preliminary data	Sep	49.2 ▲	43.7	45.5	▲
Eurozone							
⊕	13-Sep	ZEW survey expectations	Sep	- 60.7 ▼	- 54.9	--	
⊕⊕⊕⊕	14-Sep	Industrial production (sa, mom)‡	Jul	-2.3% ▼	1.1%	-1.1%	▼
⊕⊕⊕⊕	14-Sep	Industrial production (wda, yoy)‡	Jul	-2.4% ▼	2.2%	0.0%	▼
⊕⊕	15-Sep	Labour costs (yoy)‡	2Q	4.0% ▼	4.2%	--	
⊕	15-Sep	Trade balance (EUR mn)	Jul	- 34.0 ▼	- 24.6	--	
⊕⊕⊕⊕	16-Sep	Consumer inflation CPI (yoy) - final data	Aug	9.1% -	9.1%	9.1%	○
⊕⊕⊕⊕	16-Sep	Core CPI (yoy) - final data	Aug	4.3% -	4.3%	4.3%	○
⊕	22-Sep	Consumer confidence - preliminary data‡	Sep	- 28.8 ▼	- 25.0	- 25.5	▼
⊕⊕⊕	23-Sep	Composite PMI - preliminary data	Sep	48.2 ▼	48.9	48.2	○
⊕⊕⊕	23-Sep	Manufacturing PMI - preliminary data	Sep	48.5 ▼	49.6	48.8	▼
⊕⊕⊕	23-Sep	Services PMI - preliminary data	Sep	48.9 ▼	49.8	49.1	▼
Germany							
⊕⊕⊕⊕	13-Sep	Harmonized consumer inflation HICP (yoy) - final data	Aug	8.8% -	8.8%	8.8%	○
⊕⊕⊕⊕	13-Sep	Consumer inflation CPI (yoy) - final data	Aug	7.9% -	7.9%	7.9%	○

Weight	Date	Event	For	Reading ¹	Previous	Consensus ²
France 						
🔴🔴🔴🔴	15-Sep	Harmonized consumer inflation HICP (yoy) - final data	Aug	6.6% ▲	6.5%	6.5% 🟢
🔴🔴🔴🔴	15-Sep	Consumer inflation CPI (yoy) - final data‡	Aug	5.9% -	5.9%	5.8% 🟢
🔴🔴🔴	23-Sep	Composite PMI - preliminary data	Sep	51.2 ▲	50.4	49.9 🟢
🔴🔴🔴	23-Sep	Manufacturing PMI - preliminary data	Sep	47.8 ▼	50.6	49.8 🟡
Italy 						
🔴🔴🔴🔴	12-Sep	Industrial production (wda, yoy)‡	Jul	-1.4% ▼	-1.1%	-0.6% 🟡
🔴🔴🔴🔴	16-Sep	Harmonized consumer inflation HICP (yoy) - final data	Aug	9.1% ▲	9.0%	9.0% 🟢
UK 						
🔴🔴🔴🔴	12-Sep	Industrial production (yoy)	Jul	1.1% ▼	2.4%	1.9% 🟡
🔴🔴	13-Sep	Unemployment rate (ILO, 3-months)	Jul	3.6% ▼	3.8%	3.8% 🟡
🔴🔴🔴🔴	14-Sep	Consumer inflation CPI (yoy)	Aug	9.9% ▼	10.1%	10.0% 🟡
🔴🔴🔴🔴🔴	22-Sep	BoE base rate decision	Sep	22.5 ▲	17.5	22.5 ⚪
🔴🔴🔴	23-Sep	Manufacturing PMI (sa) - preliminary data	Sep	48.5 ▲	47.3	47.5 🟢
🔴🔴🔴	23-Sep	Composite PMI - preliminary data	Sep	48.4 ▼	49.6	49.0 🟡
Japan 						
🔴🔴🔴🔴	14-Sep	Industrial production (yoy) - final data	Jul	-2.0% ▼	-1.8%	--
🔴🔴🔴🔴	20-Sep	Consumer inflation CPI (yoy)	Aug	3.0% ▲	2.6%	2.9% 🟢
Chile 						
<i>No major data in the period</i>						
Canada 						
🔴🔴🔴🔴	20-Sep	Consumer inflation CPI (yoy)	Aug	7.0% ▼	7.6%	7.3% 🟡

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

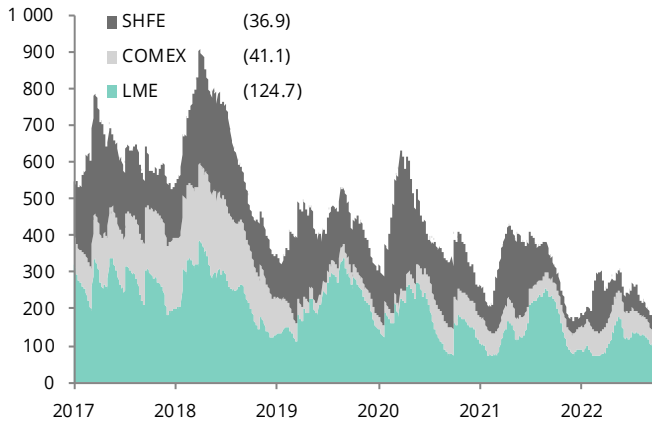
Key base & precious metal prices, exchange rates and other important market factors

<i>(as of: 23-Sep-22)</i>		Price change ¹				From year beginning ²		
	Price	2W	QTD	YTD	1Y	Average	Min	Max
LME (USD/t; Mo in USD/lbs)								
Copper	7 446.00	▼ -6.8%	▼ -9.7%	▼ -23.2%	▼ -19.5%	9 106.10	7 000.00	10 730.00
Molybdenum	17.34	▲ 7.6%	▲ 0.5%	▼ -7.2%	▼	17.82	14.10	19.33
Nickel	23 135.00	▲ 4.2%	▲ 0.2%	▲ 10.6%	▲ 20.3%	25 819.18	19 100.00	45 795.00
Aluminum	2 153.00	▼ -5.6%	▼ -10.2%	▼ -23.3%	▼ -26.7%	2 848.98	2 153.00	3 984.50
Tin	21 410.00	▲ 0.5%	▼ -20.9%	▼ -46.0%	▼ -41.5%	34 850.90	20 450.00	50 050.00
Zinc	3 035.00	▼ -5.8%	▼ -6.7%	▼ -16.4%	▼ -0.3%	3 657.40	2 921.00	4 530.00
Lead	1 802.00	▼ -6.0%	▼ -5.5%	▼ -22.6%	▼ -15.8%	2 177.42	1 802.00	2 513.00
LBMA (USD/troz)								
Silver	19.00	▲ 1.3%	▼ -6.9%	▼ -17.7%	▼ -16.4%	22.01	17.77	26.18
Gold ²	1 643.55	▼ -4.1%	▼ -9.5%	▼ -9.7%	▼ -6.1%	1 829.07	1 643.55	2 039.05
LPPM (USD/troz)								
Platinum ²	874.00	▼ -0.8%	▼ -3.6%	▼ -9.1%	▼ -11.1%	960.33	831.00	1 151.00
Palladium ²	2 098.00	▼ -2.9%	▲ 11.1%	▲ 8.8%	▲ 6.9%	2 167.46	1 810.00	3 015.00
FX³								
EURUSD	0.9754	▼ -2.9%	▼ -6.1%	▼ -13.9%	▼ -16.7%	1.0661	0.9754	1.1464
EURPLN	4.7591	▲ 1.0%	▲ 1.7%	▲ 3.5%	▲ 3.4%	4.6707	4.4879	4.9647
USDPLN	4.8796	▲ 4.7%	▲ 8.9%	▲ 20.2%	▲ 24.3%	4.3898	3.9218	4.8796
USDCAD	1.3570	▲ 4.1%	▲ 5.3%	▲ 7.0%	▲ 7.2%	1.2809	1.2451	1.3570
USDCNY	7.1284	▲ 2.9%	▲ 6.4%	▲ 12.2%	▲ 10.4%	6.6001	6.3093	7.1284
USDCLP	943.07	▲ 7.0%	▲ 2.5%	▲ 11.6%	▲ 20.1%	856.01	777.10	1 042.97
Money market								
3m LIBOR USD	3.628	▲ 0.38	▲ 1.34	▲ 3.42	▲ 3.50	1.641	0.216	3.641
3m EURIBOR	1.153	▲ 0.22	▲ 1.35	▲ 1.73	▲ 1.70	-0.157	-0.576	1.153
3m WIBOR	7.150	-	▲ 0.10	▲ 4.61	▲ 6.91	5.600	2.590	7.160
5y USD interest rate swap	4.055	▲ 0.56	▲ 0.98	▲ 2.69	▲ 3.00	2.706	1.445	4.055
5y EUR interest rate swap	2.923	▲ 0.56	▲ 1.13	▲ 2.91	▲ 3.13	1.304	0.031	2.923
5y PLN interest rate swap	6.565	▲ 0.41	▼ -0.34	▲ 2.83	▲ 4.88	5.679	3.780	7.870
Fuel								
WTI Cushing	79.24	▼ -8.7%	▼ -25.1%	▲ 2.9%	▲ 7.9%	99.09	76.99	123.70
Brent	85.69	▼ -7.2%	▼ -25.5%	▲ 10.6%	▲ 11.4%	104.40	79.83	133.89
Diesel NY (ULSD)	325.46	▼ -9.7%	▼ -16.5%	▲ 35.8%	▲ 44.6%	369.03	241.70	534.54
Others								
VIX	29.92	▲ 7.13	▲ 1.21	▲ 12.70	▲ 11.29	25.74	16.91	36.45
BBG Commodity Index	112.40	▼ -5.2%	▼ -4.0%	▲ 13.3%	▲ 14.4%	120.78	100.58	136.61
S&P500	3 693.23	▼ -9.2%	▼ -2.4%	▼ -22.5%	▼ -17.0%	4 192.36	3 666.77	4 793.54
DAX	12 284.19	▼ -6.1%	▼ -3.9%	▼ -22.7%	▼ -21.5%	13 989.01	12 284.19	16 271.75
Shanghai Composite	3 088.37	▼ -5.3%	▼ -9.1%	▼ -15.1%	▼ -15.2%	3 279.69	2 886.43	3 632.33
WIG 20	1 457.78	▼ -5.0%	▼ -14.0%	▼ -35.7%	▼ -37.2%	1 877.84	1 452.86	2 411.11
KGHM	85.00	▼ -8.5%	▼ -28.5%	▼ -39.0%	▼ -47.7%	133.92	84.22	182.20

^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

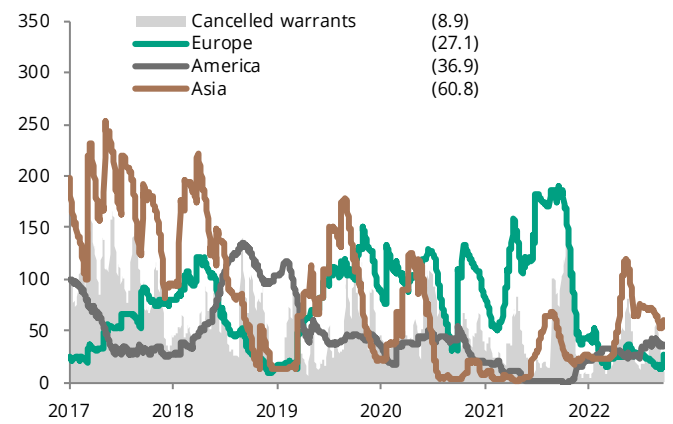
Source: Bloomberg, KGHM Polska Miedź

Copper: official exchange stocks (thousand tonnes)



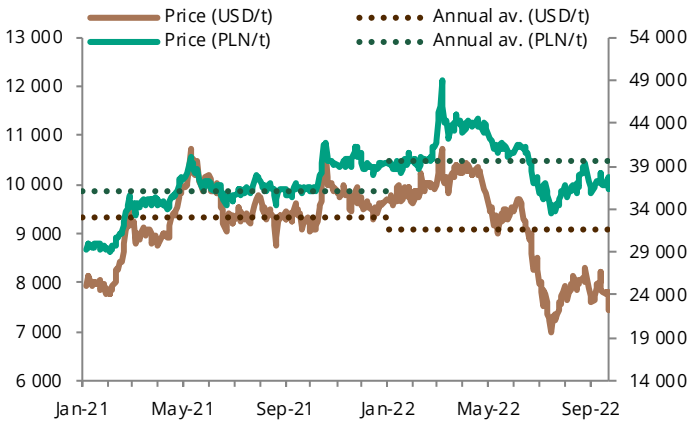
Note: Latest values in brackets. Source: Bloomberg, KGHM

Copper: official LME stocks (thousand tonnes)



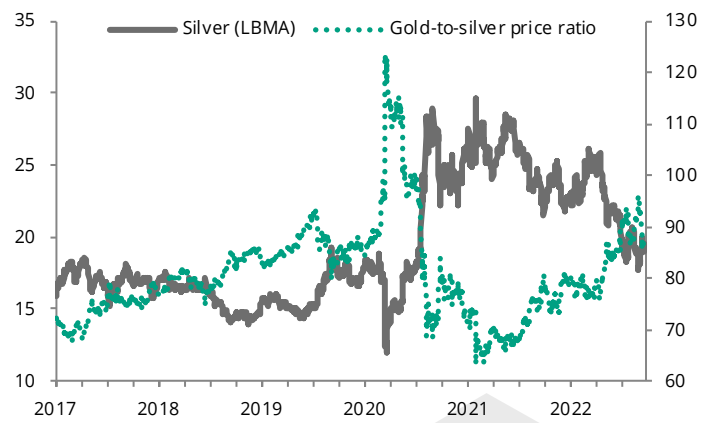
Note: Latest values in brackets. Source: Bloomberg, KGHM

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



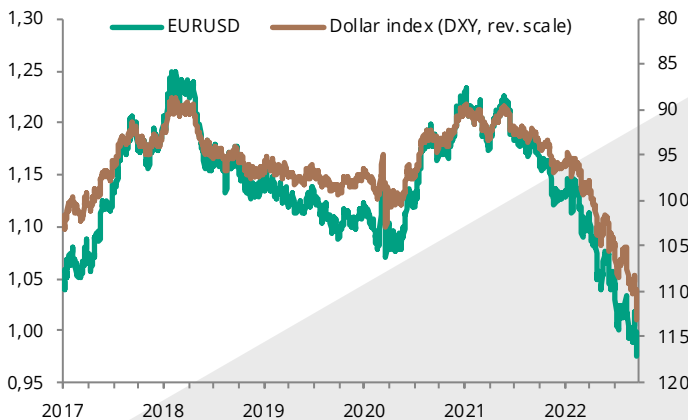
Source: Bloomberg, KGHM Polska Miedź

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



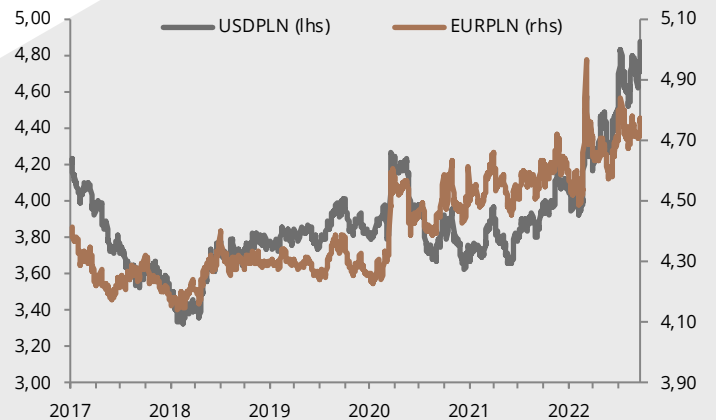
Source: Bloomberg, KGHM Polska Miedź

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:
12 - 25 September 2022.

- 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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