



# Copper investing

## Commodities

Asset Division – December 2021

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## 1. Introduction

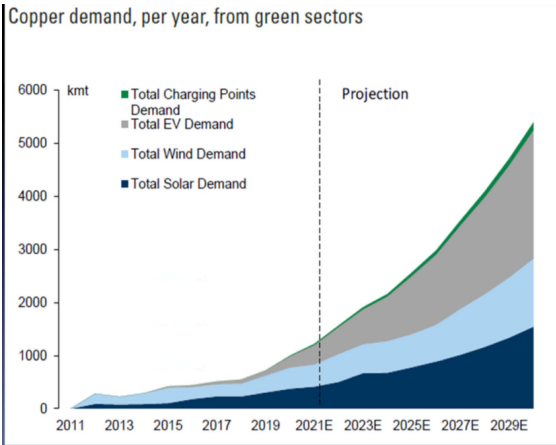
Is Dr. Copper getting a promotion? Copper, which has often been referred to as Dr. Copper for its supposed ability to act as a barometer of economic health given its average 65% correlation with the global manufacturing PMI, has been more and more under the limelight over the past year. After bottoming on March 23rd 2020, copper prices have more than doubled following rebounding trends after COVID-19 first outbreaks, even outpacing S&P 500 and NASDAQ indexes for a period. At the current point, the future outlook of copper is subject of many debates. The metal achieved - and is still further achieving - a role nobody is arguing on, given the need for this material to pursue Net Zero, COP26 and other sustainability-related goals. That said, one party believes that now prices are distorted, due to reflation and a very particular environment that resulted from the COVID-19 shocks and the aftermath of the past financial turmoil, while another chorus conversely believes that the importance of copper, combined with its scarcity, will further boost its price to new highs. In this report, we give various insights on the new role of copper, its peculiarities, and the opportunities and pitfalls of copper as a possible investment.

## 2. Copper: Powering the Green Transition?

We live in times of great disruption. Through the forces of ever more technological advancement, we are changing the way we move, communicate, work, and live at a rapid speed. A particular industry that undergoes a paradigm shift is the car industry. On the one hand, new brands are collecting unheard sums of cash from investors to develop prototypes of electrical powered vehicles. While on the other hand, every incumbent firm is either launching EV models themselves or even announcing to go fully electric. There is little certainty about who comes out atop, but one thing is for sure. Cars will be powered by electricity.

Next to that, there is ever more demand for renewable energy from wind and solar sources. This requires a greater ability to store electricity and give it out when it is needed. To quote Elon Musk: *“These are rough numbers, but you roughly need twice as much electricity if all transport goes electric, and then you need 3 times as much electricity if all heating goes electric.”* What all these developments have in common is that one raw material is essential in powering these trends, and that is copper.

For example, an EV needs 4 times as much copper as a traditional combustion engine. Copper is also an essential part of any wind or solar power installation for its important properties such as electric and thermal conductivity and corrosion resistance, according to Goldman Sachs' Commodities Research.



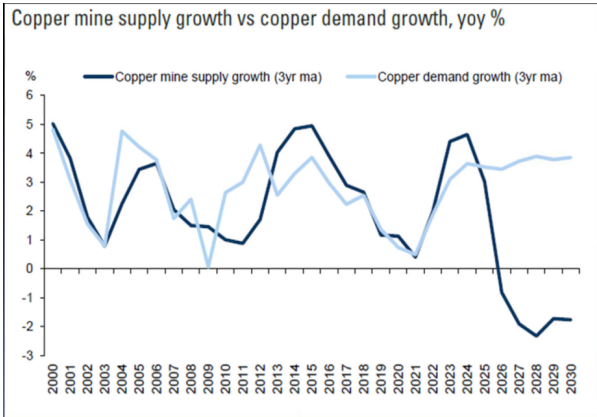
Source: Goldman Sachs Global Investments Research

On top of that comes the crypto hype, where mining of the coins requires large sums of electricity. Leading industry experts such as Goldman Sachs proclaim that copper is the new oil.

Indeed, Goldman Sachs' Commodities Outlook projects that green electrification will require an additional 5 Million metric tonnes of copper by 2029, which would amount to 16% of global demand. However, there seems to be a great supply shortage inbound as the pipeline of potential new

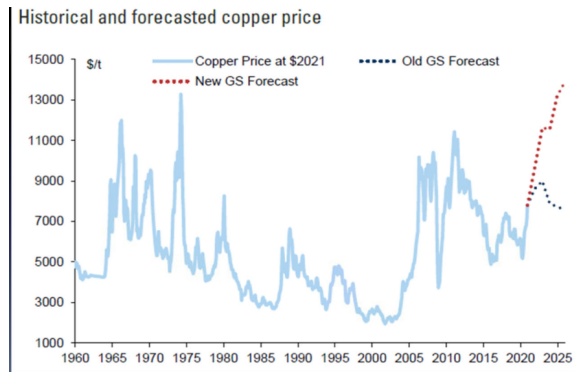
projects to add capacity is down more than 60% compared to 2008, according to Mackenzie's "A Green Revolution: What Could It Mean for Mining?" Report from April 2021.

Therefore, a large supply gap may be arising fueled by the large demand for copper to boost green energy transition and the limited ability to increase output. This in turn may lead to an increase in copper prices.



Source: Wood Mackenzie, Goldman Sachs Global Investment Outlook

So far the copper price has been steadily climbing for the past year more than doubling to USD 10.000 per metric ton. However, examining the historic price fluctuations, this does not seem to be out of the ordinary pattern which records extreme periodic price volatility. Nonetheless, Goldman Sachs readjusted their Price Expectations Outlook to USD 15.000 per metric ton by the end of 2025.



Source: World Bank, Goldman Sachs Global Investment Research

As a consequence of the increasing copper prices, second order effects may arise as merchants and manufacturers who do not want to have a high cost of manufacturing turn to other raw materials such as scrap copper or aluminum to substitute production processes.

A factor that may also affect future copper price outlook, is the location where it can be found. Chile, China and Peru are the three largest copper exporters in the world and political as well as economic instability may impact supply chains.

Concludingly, 2020 has been a good year for commodities as an asset class and the CRB Index is up over 20%. With the development of the vaccine, an increasing number of investors deem the COVID-19 crisis to be largely over, and a period of great economic expansion awaits. Copper is destined to play a large role in the way we power our energy demands and transport

things and people. Keeping a close eye on the copper market should be at the heart of every investor.

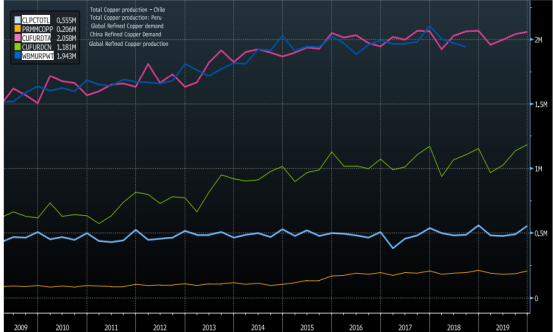
### 3. Copper investing during a turning phase in market conjunctures

As many professionals agree, this is quite a challenging time for investors, seeking for returns while coping with new and old risk factors and forces that often get into conflict with each other when making a guess on what to invest in and what not. Copper is a perfect example: no doubt this metal will be crucial in the future both for environmental achievements and for the profits of many companies, but the incredible amount of liquidity currently pumped into the market by all the central banks around the world suggests to be cautious. In this section, we attempt to give a taste of what has driven and will drive the price of copper in the future and analyze how an individual investor can get exposure to copper easily.

#### 3.1 Drivers from economy and society

Despite the furtherly pivotal role copper is likely to achieve in tomorrow's economy, forecasting the most credible pattern for its price is anything but a child's game. Most of the influence on the market (on both buy

and sell-side) is from players you can count on one hand, so that any country-specific event has the potential to significantly deviate price outcomes. As for the producers, Chile and Peru account for almost half of the overall production, being respectively the first (~5,500 thousands of tons in 2020) and the third (~3,460 thousands of tons) producers globally. China trails behind Chile and Peru with around 1,650 thousands of tons produced in 2020. But, China consumes even more than half (green line in the graph below) of the global demand for refined copper which tends to coincide with the global production indeed (pink and blue lines; the yellow and the light blue lines track the copper production shares for Peru and Chile).<sup>1</sup>



*Quarterly data for the 2009-2019 period.  
Source: Bloomberg*

Thus, it is not a surprise to find references to at least one of these countries in every copper-related article: the ongoing protests

and frequent roadblocks in both the American countries due to environmental and workers’ payroll problems in the mining business are an evergreen and fuel the uncertainty about this market. Likewise, China keeps pushing on its plan to size up its copper inflow from local and offshore mines thanks to green- and brownfield direct investments such as the Kamoa-Kakula mine project in SDR Congo. A Chinese-Canadian joint-venture which may provide the participants with around 43,6 million tons of copper, equal to 37% of the Chinese reserves: the project is still in an early-phase and the first shipment reached China in October 2021. Anyway, the aim is to achieve an even higher level of independence from the other major players, through even riskier investments as the one starting at the Mes Anyak mine (Afghanistan): projects highlighting the crucial importance of copper for China and for future economies overall and that, if succeeding, would push prices down in the next years. Moreover, the ever-growing SRI wave claims the urgency of a more sustainable way of mining “green” copper of which demand is rapidly increasing. While Chile has already taken the first steps towards this goal via green-bonds-financed investments and blockchain-based

<sup>1</sup> Chile has 8 out of the 20 largest copper mines, by capacity, Peru 4, China none. On the other hand,

China stands out as having 7 of the top 20 copper smelters by capacity and 9 of the top 20 copper refineries by capacity (source: Bloomberg).

informational disclosures for mining companies, the evolution and real outcomes of this process are not easily predictable, but we guess that green copper may demand a premium over the price of its non-ESG-friendly twin.

### 3.2 Drivers from the financial markets

There’s a big chance that, despite the real importance of copper, the current prices are affected by patterns driven by either a “bubbly” environment<sup>2</sup>, characterized by a lot of hype around futuristic electric vehicles and tech-related topics, or by liquidity abundance. According to a report by J.P. Morgan in May, copper is defined as an asset that should benefit from a strong, cyclical reflationary rebound in the near-term and the secular revolution in green energy over a longer time horizon, the current quotes are nevertheless a result of the Chinese credit stimulus that is about to come to an end. Thus, leading this bullish trend to fade in early 2022.

Another macro-regression model by the Bloomberg analyst Grant Sporre sees copper traded on the LME as overvalued by USD1,040 a ton in the early December

<sup>2</sup>Some companies reflect this concern more than others. As an example, Teck Resources Ltd (NYSE:TECK) currently trades at a P/E multiple

(price is around USD 9,500 per ton currently): indeed slowing Chinese demand may see inventories build in 2022, making copper more vulnerable to a price correction that may still be initially curbed by inflation.

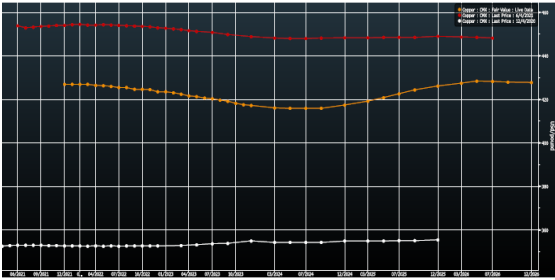


Source: J.P. Morgan

Copper exchange participants seem to agree with these views on future trends. Though shifting in a quite parallel fashion around absolute price levels for different terms, so reflecting the high volatility that is affecting this market, the spot prices on the commodity exchange (COMEX) run by the Chicago Mercantile Exchange Group (CME) are expected to drop in the first half of 2022 and only in later years to rebound. The chart below plots the prices at which futures for different maturities traded on December 4th (orange line), six months before on April 4th (red line: about 4,5%

equal to 174.1 and an EV/EBITDA of 41.2. The Bloomberg 1 year-forward estimates are respectively 5.8 and 3.5.

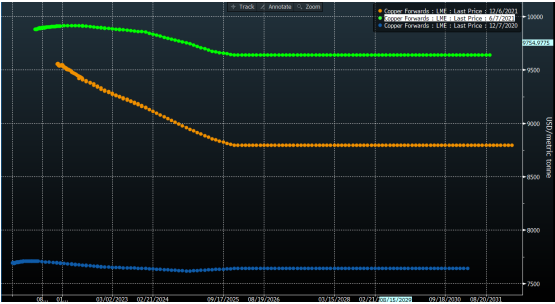
above the current level) and one year before on December 4th 2020 (white line: around 20% below). Bank of America also aligned itself with this forecast, predicting a last rise in early 2022 before a decrease due to new surplus from mining.



Source: Bloomberg

A further point to keep in mind is that, for copper, the CME Group only manages warehouses<sup>3</sup> located in the U.S. The consequent implications for the costs of physical delivery around the world make the prices on this exchange somehow more biased towards the U.S. market. This is consistent with the prices on the other major commodity exchange, the London Metal Exchange (LME), that stores copper reserves in various parts of the world. Indeed, prices are decreasing in term maturity for every date until December 2025, and no significant rebound seems priced in at the moment.

<sup>3</sup> Recent trades pushed exchange warehouses stocks to historical minimal levels: according to the CME Group, on December 3rd only 4 out of 8



As for the previous chart, the upper line tracks quotes from 6 months ago, the middle one the current levels and the lower one the one-year lagged ones. Source: Bloomberg

The graph above is a so-called backwardation pattern. If this view is right, traders and market participants with available reserves would better sell physical copper now at a high price and immediately lock-in a future lower price by purchasing one of these futures, thus potentially pushing down the price now.

Lastly, especially in the futures market, prices can significantly deviate from “fundamental value”, as happened in the last “October Chaos” for copper: a situation of severe undersupply, which was probably due to excessive speculation, made futures prices skyrocket and left the exchange warehouses with very scarce reserves. This pushed regulators to temporarily suspend short sales and bid-ask spreads to widen sharply. The stock shortage was so critical

warehouses stored a non-null amount of copper, overall equal to 58,000 tons. LME reached a floor of just 14,150 tons in the last October before rebounding around 74 thousands tons in December.



that LME had to come into talks with China, the major copper importer, for the shipment of large amounts of metal to the LME warehouses.

### 3.3 So, how to invest in copper?



The upper chart shows the price evolution of three items over the 2017-2021 period, normalized at the level of December 7th 2016. The orange line tracks the price of the 3-months copper futures on the LME, the blue line is the WisdomTree Copper ETC and the white one is this latter’s benchmark, the Bloomberg Copper Subindex Index. The lower chart shows the evolution of the correlation coefficient between the copper-cash price on the LME and the S&P 500 index, which never went far above 0.5. The differences in the last 5 years’ performance of these instruments is evident: over this period, on an annualized basis the 3-months futures price grew by around 10% per year, the benchmark index by 9.3% and the ETC

share price by 7.01%. How to explain these gaps? As for 0.7% between futures and benchmark, we can look at the index calculation method which may imply some misalignment, and indeed the value of the copper component of the Bloomberg Commodity Index is determined by futures market data from the LME, but also from the COMEX<sup>4</sup>. Regarding the 2.29% spread between the returns on the index and the ETC, this cannot be justified solely by the 0.49% expense ratio per year. From the Factsheet we see that the ETC aims to replicate the benchmark performance by using swaps, not futures. The stated daily swap rate paid by the sponsor in return for the index-linked cash flows equals 0.123 basis points, that is 0.4% per year. This does not explain the difference yet. In fact, tracking an underlying asset through derivatives may lead to imperfect results due to transaction and rollover costs, i.e. the cost of switching from an expiring futures contract to a longer-lived one. That may have an impact especially when the price of the latter is higher than the price of the expiring contract. Then, additionally, a swap is a different instrument, with longer maturities than futures and other drivers

<sup>4</sup> “BCOM utilizes the Copper contract traded on the COMEX division of the New York Mercantile Exchange (“COMEX”) as the Designated Contract for copper but utilizes COMEX prices for this Designated Contract and LME copper contract

volume data for purposes of Index calculation. The Index incorporates volume data for the LME copper contract as it is more actively traded than the COMEX High Grade Copper contract and provides a better indication of the relative significance of this commodity”. Source: Bloomberg.

behind prices.<sup>5</sup> Despite these deviations and the other mentioned problems around derivatives markets, no physical copper ETPs have ever taken hold and no funds of this type exist now, indeed, although there are many examples of these types of products related to many other metals. In fact, even the attempts from J.P. Morgan and BlackRock have always failed to either being approved by the SEC or appreciated by the markets.<sup>6</sup> Around 2010 concerns about copper-linked ones were raised by both regulators and other market participants and were based on the fact that keeping large stocks stored as a permanent collateral would have a potential and disruptive impact on a market where consumption is really high with respect to production. Additionally, storage comes at a cost. If the ETP inflows are not high enough, even an expense ratio above the median may not get an ETP provide the sponsor with a profit and thus survive. This was probably also the case a decade ago, when the future role of copper was still out of radars so physical ETCs on this metal didn't seem a need. Unlike for gold, that is still a type of investment with different

goals. Lastly, all these proposals came out in a very unlucky period for copper, that plunged between 2011 and 2016, causing big losses for already existing ETFs, such as the GlobalX Copper Miners ETF, and further discouraging new entrants. All these factors paved the way to synthetic copper ETPs, and now that these have reached a level of AUM hardly replicable by newly-born physical funds, there's not a great likelihood to see them in our portfolios over the next few years.

So, keeping in mind that by investing in this sector without an hedge we're likely to take a position on at least one exchange rate (since both futures and most of related equity shares are USD-denominated) here are the only two quick and efficient ways to significantly invest in copper without (directly) dealing with derivatives: synthetic ETPs, or equity ETFs investing in companies in the mining and refining industry, bearing in mind that in the latter case exposure to various and further risk factors is taken, from systemic to company-specific. Unfortunately for European investors, the range of instruments available

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<sup>5</sup> According to the ETP Factsheet, the daily swap rate paid by the sponsor in return for the cash flows related to the performance of the benchmark equals 0.123 basis points, that is an annualized rate of 44 basis points: the sum of this and of the expense ratio doesn't explain the deviation yet. A further possible explanation may be a temporary gap

between the NAV and the market price of the ETP. This is more likely in less liquid markets.

<sup>6</sup> J.P. Morgan needed around two years, from 2010, before getting an approval from the SEC for its ETF in 2012. Nevertheless an IPO never took place: the financial company filed a Registration Withdrawal Request in December 2014. Source: SEC Reports.

for non-U.S. individuals is quite limited.

Some UCITS options here below:

**WisdomTree Copper ETC**: Probably the only relevant UCITS option, with AUM around USD 600 million and an expense ratio equal to 0.49%. As seen before, its share value may deviate a bit from the spot price of copper. In addition, currency-hedged and leveraged variants are tradable.

**GlobalX Copper Miners ETF**: With USD 1.35 billion of AUM, this passive fund invests in equity shares and depository receipts linked to companies in the copper mining industry, aiming to replicate the performance of the Solactive Global Copper Miners Total Return Index and charging a 0.69% expense ratio. Due to this targeted exposure, the degree of diversification achieved through this product is limited. Morningstar classified it as a Value-Mid Cap portfolio with an exposure around 35% of its NAV to the Canadian market and about only 8.85% to both the big global players U.S. and China. Anyway, many constituents operate also in other businesses, so the impact of a hypothetical specific downturn in copper price might not be as large as for the ETC.

An aerial night view of a city skyline, likely New York City, featuring a river and a bridge. The city lights are visible against the dark sky, and the water reflects the lights. The overall tone is blue and dark, with some warm lights from the buildings and streets.

# Conclusion

Only the future can tell if copper will indeed be able to rise up and replace oil as the commodity to power our lives. Evaluating its strong use case for the transition towards a sustainable green infrastructure definitely provides a strong argument for those in favor of this assumption.

Nevertheless, investors should be wary as there are issues surrounding the extraction of this precious element. As can be seen with oil, geopolitical rows may certainly impact the price and availability and eventually be abused for power plays. There is also a market wide danger that can impact the investment outlook of copper fuelled by a frenzy for EV companies and record low interest rates. There is certainly a chance to end up in a bear market sending the prices down. Investors that are eager to invest can find a list of compelling investment cases in this report. The general emphasis of this report is that copper will play a pivotal role in the economy of tomorrow. To what extent, however, is still subject to debate.

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