GLOBAL X ETFs RESEARCH

What's Driving Copper's Rally?

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COPX – Global X Copper Miners ETF

Copper is often seen as a leading barometer for global economic health. When the COVID-19 outbreak hit China and subsequently spread across the globe, copper spot prices fell from $2.86/pound in mid-January 2020 to $2.12/pound in mid-March, falling 26%.[1] Quarantine measures forced copper mines around the world to shutter production for extended periods. A market imbalance developed shortly thereafter as certain economies began the re-opening process, but copper production lagged behind. Copper prices took off from there, hitting $3.52/pound at the end of 2020.[2] By February 2021, copper had risen above $4.00/pound, nearly doubling March's lows.

Optimism around copper stems from several factors. Asian economies, specifically China, are functioning at or close to pre-pandemic levels already. China's recovery should translate into more demand for copper as it's the world's largest source of demand for the metal. Reflation expectations in the US and other developed markets are increasing demand as well. Base metals like copper are often viewed as a hedge against price inflation and tend to do well as economic activity recovers. But beyond these near-term macro-economic trends, structural long-term changes such as accelerating electric vehicle adoption and the increasing potential for major infrastructure spending in the United States both bode well for copper.

Key Takeaways:

- Copper prices are positively correlated to inflation, and the metal is historically one of the best performing assets during inflationary periods.
- China's ambitious economic plans are leading to increased copper demand, and the nation's growth is powering the copper market.
- Cleantech and renewables projects, as well as infrastructure development, represent significant growth opportunities for copper, with substantial amounts of copper required to rebuild modern infrastructure and energy systems.

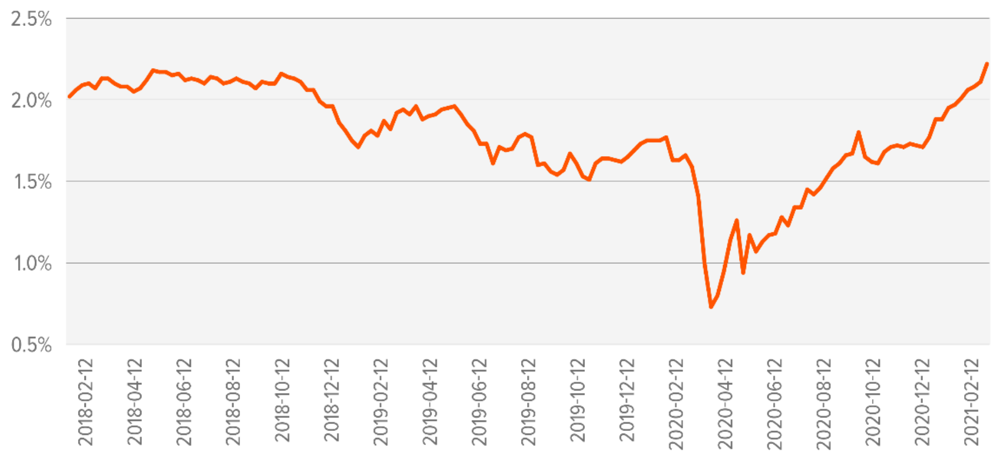
(Our primer on the copper industry can be read here for more background information.)

Copper and the Reflation Trade

Breakeven inflation rates, which measure nominal bond yields against inflation protected bond yields of similar maturities, are showing that inflation expectations are rising. The severe recessionary dip from the COVID-19 pandemic, combined with massive fiscal and monetary policy measures, and a re-opening economy is a recipe to jolt inflation.

10 YEAR BREAKEVEN INFLATION RATE (%)

Source: St. Louis Federal Reserve. Data from 2/12/2018 to 2/12/2021.

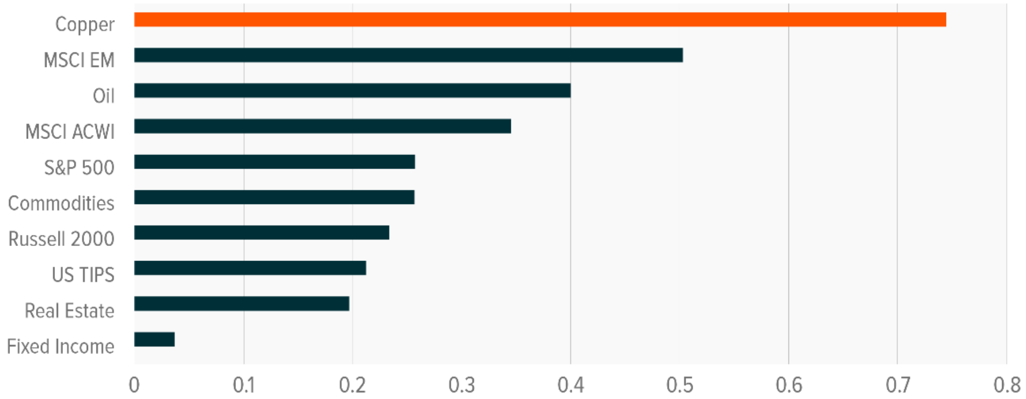


The 10 Year breakeven inflation rate has already slightly surpassed its pre-pandemic levels and may continue to rise. This trend is indicative of how expectations for inflation are increasing.

With historically low inflation since the global financial crisis, many investors have not felt compelled to position their portfolios for inflationary environments in quite a while. Inflation has not broached 3% since 2011, or 4% since the summer of 2008. But with inflation expectations rising quickly, this could change. There are several segments of the market that are often looked to for hedging inflation risks, such as cyclical equities and inflation protected bonds, but commodities like copper historically lead the way when investors believed rates were likely to take off.

CORRELATIONS TO 10-YEAR BREAKDOWN INFLATION (ANNUAL BASIS)

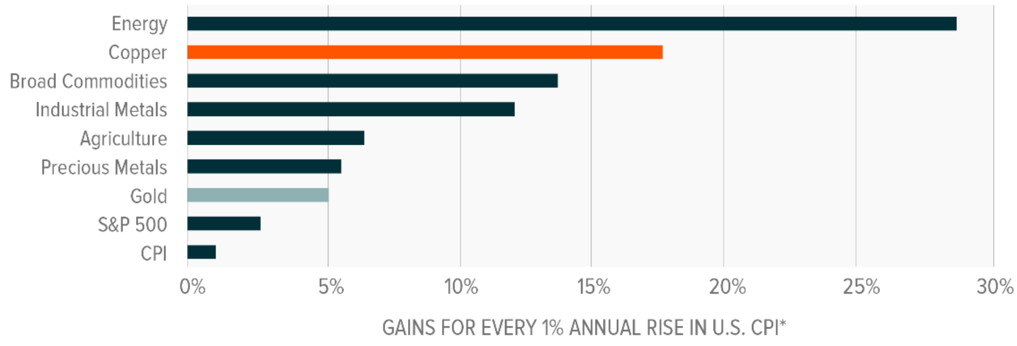
Sources: Bloomberg. Data from 12/31/1990 to 12/31/2020. Asset class representations are as follows, Copper, front month copper futures contracts; MSCI EM, MSCI Emerging Markets Index; Oil, front month WTI crude futures contracts; MSCI ACWI, MSCI ACWI Index; SPX, S&P 500 Index; Commodities, Bloomberg Commodities Index; Russell 2000, Russell 2000 Index; US Tips, Bloomberg Barclays US Treasury Inflation Notes Total Return Index; Real Estate, FTSE NAREIT All Equity REITs Index; Fixed Income, Bloomberg Barclays US Aggregate Total Return Index



Base metals like copper traditionally act as a hedge against inflation largely because costs are easily passed through the supply chain to spot prices. Further analysis shows that the price of copper has historically risen 18% for every 1% annual rise in consumer prices since 1992.[3]

INFLATION HEDGE

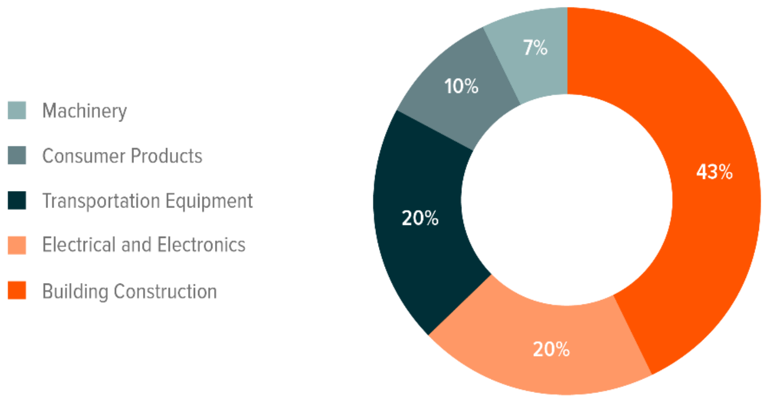
Sources: Bloomberg intelligence. *Percentages are based on annual correlation data from 1992 through 2016 using Bloomberg total return indexes.



But inflation is not occurring in a vacuum; specifically, economists and market participants are anticipating a reflationary environment in 2021, where substantial government stimulus triggers both inflation and economic growth. Copper's high correlation to economic growth is another reason why copper demand could rise in this environment. When economic conditions are strong, raw materials like copper tend to see prices rise as global demand for the commodity increases. In the United States, for example, 63% of copper was used in cyclically-associated industrial applications like building construction and transportation equipment. As we can see, when the economy is fully functioning, copper is an integral part of the economic engine.

US COPPER USE 2019

Source: Geology, "Geoscience News and Information."



The International Monetary Fund adjusted its expectations for global growth and US growth in 2021 upwards to 5.5% and 5.1% respectively, while the World Bank foresees 4% growth globally and 3.5% growth in the US. As investors position for an environment with potentially both strong growth and rising inflation, copper could thrive.

A final component of the reflation trade that could bode well for copper is a weakening US dollar. Inflation reduces the value of a currency, and therefore if US inflation accelerates, especially relative to other developed economies, the US dollar could weaken. From September 1st to February 24th, the Dollar Index has already weakened nearly 10%, falling from 99.93 to 90.18. Copper, like other commodities, is denominated in US dollars and tends to increase in US dollar terms as the USD depreciates. Further, a weakening dollar improves the purchasing power for emerging market nations like China, which can drive commodity demand higher with it. Therefore, if inflation continues to rise, economic growth recovers, and the dollar weakens, copper prices will enjoy several tailwinds related to reflation.

DOLLAR INDEX

Source: Yahoo Finance from 6/1/2020 to 2/24/2021.

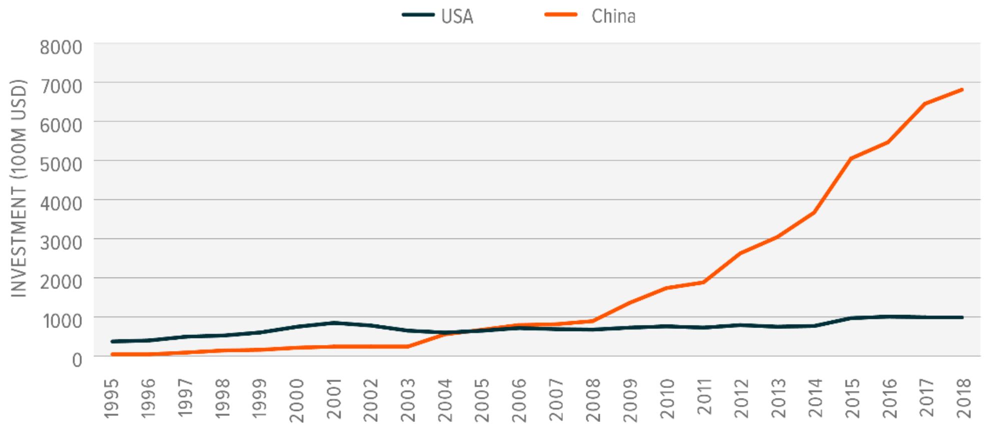
(Read more about our thoughts on inflation here)

As China Goes, So Goes Copper

China's rapid growth and burgeoning infrastructure projects significantly influence copper demand. China alone makes up over 50% of global copper demand today. [4] In 1978, China began its economic reforms and opening-up policy which gradually shifted the country to an export-led and then more recently a consumer-driven economy. These reforms set the stage for China's meteoric economic rise over the next four decades, with GDP (2010 US dollars) growing nearly 34-fold from $340.67 billion in 1980 to $11.53 trillion in 2019.[5] A good portion of this growth was driven by massive infrastructure projects, which contributed to a dramatic rise in copper consumption, from 1.85 million tons in 2000 to 12.0 million tons in 2019.[6]

TRANSPORTATION INFRASTRUCTURE INVESTMENT

Source: OECD.

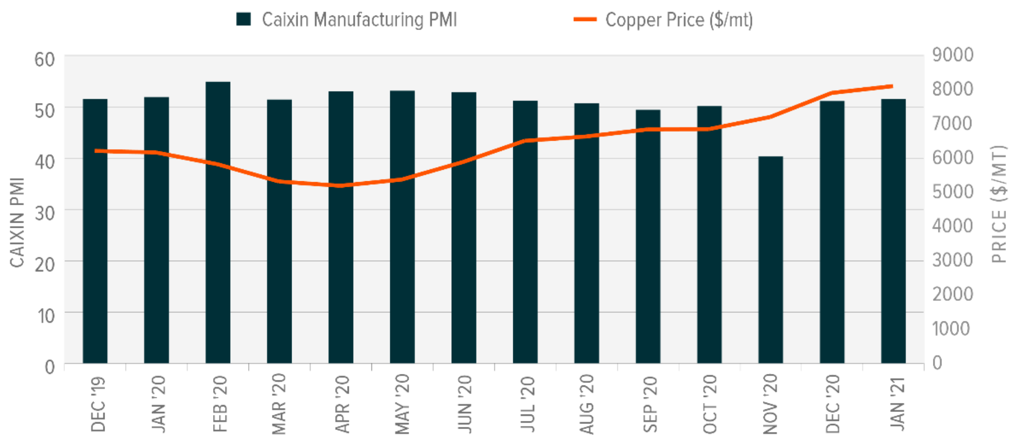


To understand China's influence in the copper market, it's important to look at their growth strategy across periods. When faced with economic headwinds during the 1997 Asian financial crisis and the 2008 global financial crisis, China turned to infrastructure spending as a primary means to stimulate the economy. This strategy was used again in 2020 when China issued $565 billion in special bonds for infrastructure development during the COVID-19 crisis. Beyond its borders, China has been building infrastructure in developing countries since 2013 as part of a diplomatic and economic strategy known as the Belt and Road Initiative (BRI). Projects in the BRI were estimated to cost $1 trillion USD as of 2019.[7] Copper offers the highest conductivity properties of any non-precious metal, and is highly resistant to corrosion.[8] This makes copper the ideal metal in the industrial electrical wiring process needed for infrastructure projects.

In February 2020, China implemented a nationwide lockdown that brought factory output down to abnormally low levels. It is no surprise that this flowed through into copper prices. Peak to trough, from January 13th to March 23rd, copper prices declined by -26.2%.[9] China's recovery out of the pandemic became a crucial driver to copper demand, with PMI numbers jumping from 35.7 in February 2020 to 51.3 in January 2021 coinciding with a rise in copper prices.

WORLD COPPER PRICE & CHN MANUFACTURING PMI

Sources: World Bank, Koyfin.



At the December 2018 Central Economic Work Conference, the Chinese government began to use the term "new infrastructure" to refer to its shift towards high-tech infrastructure projects based in 5G, AI, IoT, UHV (ultra-high voltage) and other emerging technologies. The government's pledge to achieve net-zero emissions by 2060 also signaled an increasing commitment to cleantech and electric vehicles.

Copper looks well-positioned to benefit from China's "new infrastructure" commitments as well. To give an idea of how much copper is needed for this transition:

- China's growing wind power needs require an estimated 110 kilo-tonnes per annum of copper a year between 2018 and 2028.[10] This is expected to contribute to a widening copper market deficit of nearly 510 kilo-tonnes by 2027.[11] A new policy document by China's National Energy Administration reportedly stated that China has a goal of boosting solar and wind capacity to 1,200 gigawatts by 2030.[12]

- Forecasts hold that by 2025, there will be 8.5 million EV sales globally, with 54% occurring in China.[13,14] Given that a fully electric car on average requires 80 kg of copper[15], that means 367 million kg or 404.55 kilo-tonnes of copper will go to China from EV sales alone.

- New infrastructure projects, which include 5G, AI, IoT etc, will require 150 kilo-tonnes of copper.[16] China's Ministry of Industry and Information Technology states that China Telecom and China Unicom expect to add more than 600,000 5G base stations in 2021, on top of the 700,000 they have built to date. In 2020 alone, China built a total of 330,000 5G base stations.[17]

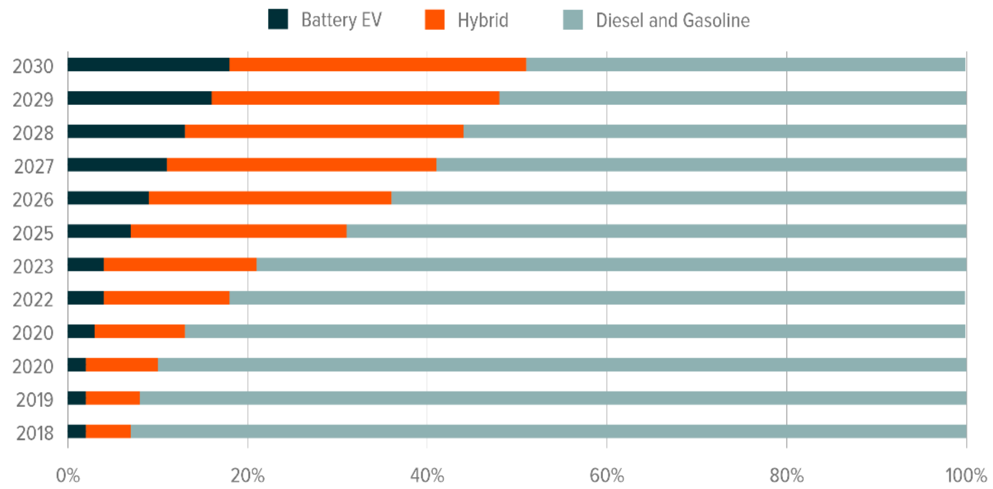
These estimates highlight that integrating new technologies into China's infrastructure base will cause a substantial increase in copper demand.

US CleanTech Push Could Spur Demand as Well

Copper is known for its broad use in equipment, infrastructure, construction, transportation, and industrials. But one factor that is often overlooked is its importance to clean technologies. Wiring in electric cars requires nearly four times as much copper than gasoline cars.[18] For EVs to take off, infrastructure must be upgraded to accommodate them. A major aspect of upgrading infrastructure is installing charging ports, which also require copper to manufacture. Some countries are already installing charging ports, and this trend will only accelerate as EVs gain popularity. China's "new infrastructure" plan includes money earmarked for installing charging ports around the country. In 2020, as part of its efforts to rehabilitate the economy, China committed to spending $1.42 billion on 600,000 charging ports around the country.[19] President Biden's platform included a pledge to install 500,000 charging ports around the country, which if successful could get the ball rolling for more adoption of EVs in the US.[20] An estimated 500,000 charging ports along with the 500,000 electric school buses also promised by the Biden campaign could require 200,000 tons of copper.[21]

PROJECTED EV ADOPTION: 2018-2030

Sources: BCG Analysis, Automotive News as of 1/27/2020.



Beyond EVs and charging infrastructure, renewable energy sources like solar panels and wind turbines require approximately five times more copper than gas and coal-powered electricity generation.[22] As the US recommits to the Paris Agreement and seeks to reach carbon neutrality by 2050, copper demand could rise substantially.

As the symptoms of climate change become increasingly difficult to ignore, more countries are making pledges to achieve net-zero emissions within the next few decades. The UK, France, Japan, South Korea, Denmark, New Zealand, Hungary and more have committed to achieving net-zero emissions by 2050. China recently declared that it would aim to have net-zero emissions by 2060. The world is gradually moving towards a consensus on net-zero emissions, and the rise of cleantech should bode well for copper.

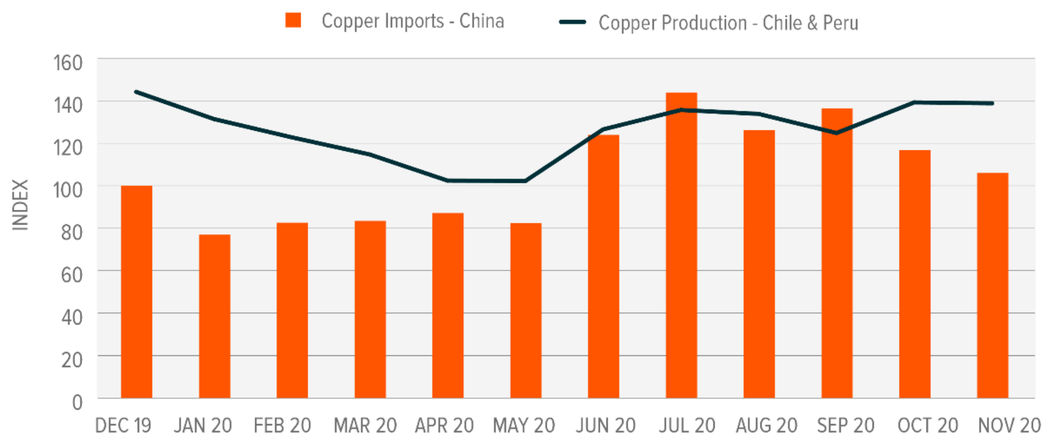
Beyond cleantech, the Biden administration has made several pledges to upgrade America's infrastructure. As we explained in one of our blog posts after the election, Biden ran on a campaign of aggressive infrastructure investment as a key pillar of economic policy and potential COVID recovery efforts. His administration plans to rebuild and upgrade America's highways, roads and bridges, all of which require copper. The Biden administration is also cognizant of the need for digital high-tech infrastructure, which again bodes well for copper. In short, infrastructure depends on copper, and copper depends on infrastructure. This is important to remember as we watch what the Biden administration does over the next four years.

High Risk of Supply Constraints in Latin America

While China is the key to copper demand, Latin America is its counterpart on the supply side of the equation. Chile and Peru alone provide 40% of the global copper supply.[23] Lockdowns and reduced mining output in Chile and Peru became a cause for concern in 2020 amid the pandemic. Constricted levels of supply may have buoyed global copper prices to some extent as the global economy shut down, with prices falling less than other commodities, like oil, amid the turbulent period. But there is a risk that copper mines in Chile and Peru could once again fall into reduced capacity or even shutdowns if the spread of COVID-19 worsens.

PERU AND CHILE COPPER PRODUCTION VS. CHINESE COPPER IMPORTS

Sources: National Statistics Institute of Chile, Koyfin, Bloomberg.



This graph shows the combined copper production for both Peru and Chile against Chinese copper imports, with production levels in 2014 used as a base. For the Chinese copper import index, import levels in December 2019 equal 100.

Chile & Peru

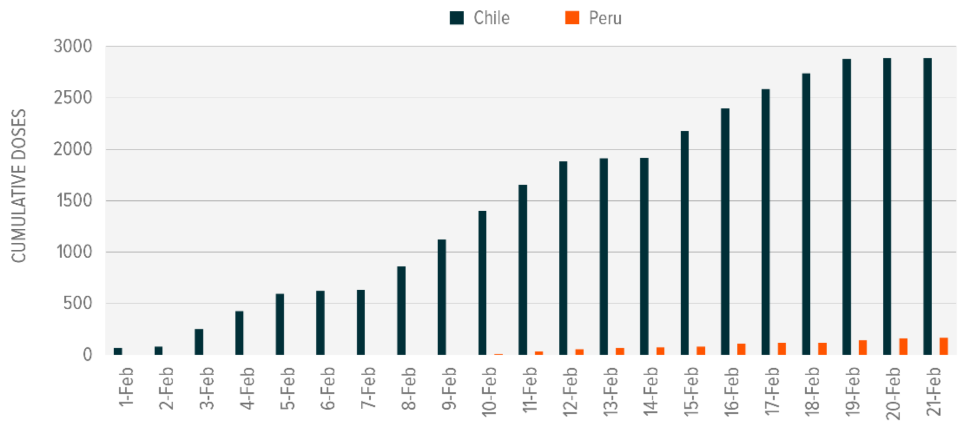
Both Chile and Peru implemented some form of lockdown at different points in time. Peru's first lockdown began in mid-March 2020 and continued until April 2020. Faced with a second wave of COVID-19 cases in 2021, the Peruvian government announced a broad lockdown beginning on January 31th and continuing until February 14th. These lockdowns have had a palpable effect on copper production. According to the ISCG, copper production in Chile contracted 14.5% between January and

October 2020.[24] As shown in the visual above, the months of April and May were particularly detrimental to copper production. Meanwhile, copper production in Peru tumbled from 225,496 tons in December 2019 to a nadir of 125,224 tons in April 2020. In total, the Peruvian government estimates that copper production fell by 12.5% to 2.15 million tons in 2020.[25]

The first lockdown clearly disrupted Peruvian mining. When the government announced a new lockdown in January 2021, it went out of its way to state that mining operations will be granted an exception. The government's willingness to grant exceptions to mines may mitigate the extent of further supply disruptions in 2021, balancing the copper market to some extent in the near-term.

Vaccinations are a mitigating factor worth paying attention to. Chile's rollout of vaccinations began at the start of February 2021 and has been moving along at an impressive pace. The Chilean government has a goal of vaccinating 15 million people by mid-2021.[26] Given that Chile has a population of 19 million people, if this goal is achieved, it would mean that close to 80% of the population would be vaccinated by mid-2021. Peru is lagging behind Chile in its vaccination efforts. As of February 22nd, Peru has only administered 166,090 doses, which amounts to 0.50 doses per 100 people.[27] The main takeaway here is that there is risk in both countries, but based on progress with vaccinations, the risk is lower in Chile than in Peru.

DOSES ADMINISTERED (THOUSANDS): CHILE VS PERU
Sources: Our World in Data.



Peru has a population of approximately 32 million whereas Chile has a population of about 19 million.

Conclusion

2021 may prove to be a transformation year for copper. Inflation expectations are rising, while global economic growth is recovering, with Chinese demand in particular coming back online at a rapid pace. These short-term fluctuations are important to consider, but they are not the whole story. Looking out into the long-term, demand for copper looks set to grow further. The rise of new industries like electric vehicles and renewable energy as well as continuing traditional infrastructure needs in China and the US mean that demand for copper will likely persist well after COVID-19 disruptions subside.

Investors who are optimistic about copper have a few options to choose from:

- Investors can choose to buy physical copper if they are willing and able to handle potentially high costs of storage

- Alternatively, investors can forgo storage costs by buying common stock of companies involved in the copper industry. Of course, investors who choose this route must be aware of the other factors that could affect the stock of the companies they invest in.

- Finally, investors can bet on the price of copper through copper futures but doing so means taking on the risk of contango, which can result in the decay of one's investments over time. Contango is a state in which the price of futures contract is above the expected spot price of the underlying commodity.

A liquid alternative might be an exchange-traded fund (ETF) like the Global X Copper Miners ETF (COPX) that invests in copper mining equities from around the world.

Related ETFs

COPX: The Global X Copper Miners ETF (COPX) provides investors access to a broad range of copper mining companies around the world.

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27. Our World in Data

DEFINITIONS

Copper: Measured based on the Generic 1st ‘HG’ Future, which is the nearest copper future to expiration.

MSCI Emerging Markets Index: MSCI Emerging Markets Index is a free-float weighted equity index that captures large and mid-cap representation across Emerging Markets (EM) countries.

Oil: Measured based on the Generic 1st ‘CL’ Future, which is the nearest copper future to expiration.

MSCI ACWI: MSCI ACWI Index captures large and mid-cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries. The index covers approximately 85% of the global investable equity opportunity set. DM countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the US. EM countries include: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates

S&P 500 Index: S&P 500 Index tracks the performance of 500 leading U.S. stocks and captures approximately 80% coverage of available U.S. market capitalization. It is widely regarded as the best single gauge of large-cap U.S. equities

Bloomberg Commodities Index: Bloomberg Commodity Index is calculated on an excess return basis and reflects commodity futures price movements.

Russell 2000 Index: Russell 2000 Index is comprised of the smallest 2000 companies in the Russell 3000 Index, which represents approximately 8% of the Russell 3000 total market capitalization.

Bloomberg Barclays US Treasury Inflation Notes Total Return: Measures the performance of the US Treasury Inflation Protected Securities (TIPS) market.

FTSE NAREIT All Equity REITs Index: A free float adjusted market capitalization weighted index that includes all tax qualified equity REITs listed in the NYSE, AMEX, and NASDAQ National Market.

Bloomberg Barclays US Aggregate Total Return Index: A broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable market. The index includes Treasuries, government-related and corporate securities, mortgage-backed securities, asset-backed securities, and commercial mortgage-backed securities.