

Copper Industry

THEMATIC PLAYBOOK | MarketDesk Investment Strategy



Copper: Trade Sentiment Distorting Copper Fundamentals?

THE QUICK NUMBERS

29%

Chile's share of global copper production in 2019; More than double the second top producing country, Peru (ICSG)

~132 lbs

Estimated amount of copper in a plug-in hybrid vehicle, up from ~51 lbs in an internal combustion engine (ICA)

\$142Bn

Amount of Chinese special bond quota pulled forward to 2019 from 2020; Special bonds fund infrastructure (Reuters)

WHAT'S HAPPENING?

Macro sentiment and economic growth significantly influence the global copper market. Copper is a widely used industrial metal, making it a good indicator of economic health and earning it the nickname Dr. Copper. Dr. Copper has had to contend with a parade of macro issues this year. The U.S. and China facing off for global superiority. An inability for the UK and Europe to finalize Brexit. Hong Kong citizens protesting a Chinese extradition bill. NAFTA 2.0's impact on the North America supply chain. It feels cliché to say, "the world has never been this uncertain", but the world has never been this type of uncertain. Today's uncertainty is driven by changes to decades old trading relationships and economic unions. Both could disrupt how business is done. When economic growth slows, there is a reasonable expectation it will rebound in the future. When global trade rules change, business owners are unable to plan for the future and delay capital spending plans. The latter is what happened in 2019, which resulted in lower industrial production and limited copper demand.

THE MARKET OPPORTUNITY & INVESTMENT CASE

There's been a lack of fundamental direction on copper fundamentals in 2019. With no clear direction, the industrial metal become the unofficial "trade tracker". It fluctuated up and down based on trade sentiment and the latest global growth estimates. The short-term trade sentiment focus has distracted investors from copper's underlying fundamentals in our view.

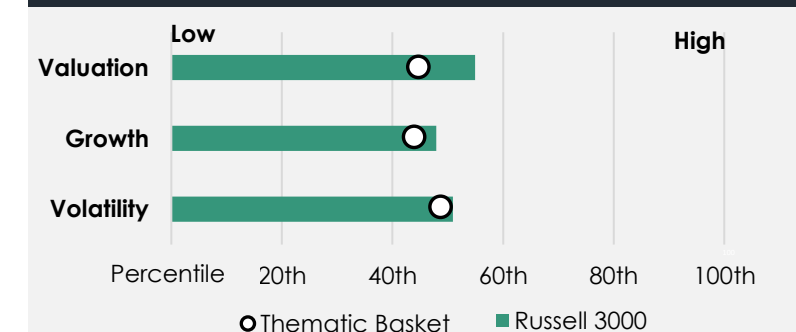
Below are four potential catalysts that could lead to a copper rally:

- Trade Deal Resolution:** A resolution to ongoing global trade negotiations would provide much needed certainty for businesses. Improved business confidence could lead to increased industrial production and copper demand. This is partly in action already, as Democrats and the White House agreed to a updated USMCA draft and U.S.-China leaders announced a "Phase One" deal to delay December 2019 tariffs and decrease the rate on tariffs already in effect.
- Increased Inflation:** Inflationary pressures continue to be low despite low interest rates. However, monetary policy and fiscal policy across the globe continue to trend toward expansionary. From a monetary perspective, global central banks are cutting interest rates to support their domestic economies. On the fiscal policy front, governments are campaigning on increased public spending to appease voters and win elections. Interest rate cuts and increased government spending are both examples of expansionary policies, which tend to expand the economy. The result could be increased inflation. Copper tends to be a good inflation hedge.
- Electric Vehicle Growth:** Electric vehicles (EVs) use significantly more copper than today's internal combustion engines. EV growth represents a substantial source of future copper demand. However, the EV industry has struggled to gain traction. High production costs limit the ability of individuals to purchase EVs. Limited battery capacity and lack of charging infrastructure limit the practicality of driving EVs. Improvements in EV technology could increase affordability and practicality, which would in turn increase copper demand.

Key Statistics

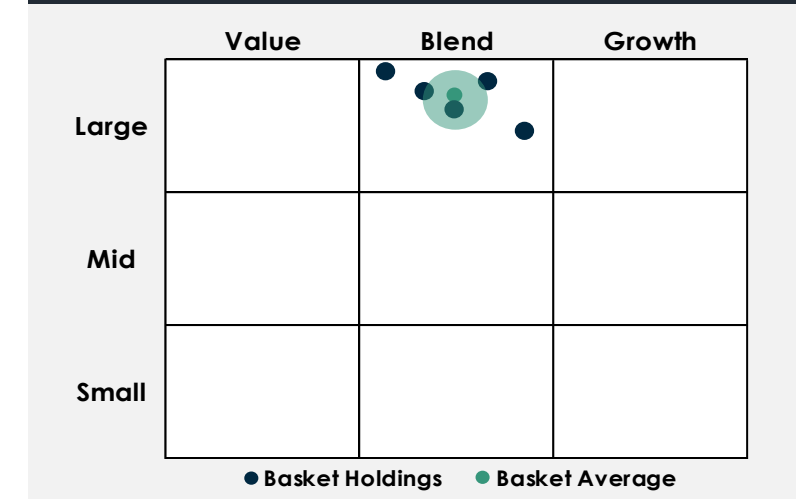
Sector	Materials
Sub-Industries	Copper
Holdings	5
Average Market Cap (\$M)	\$35,326
NTM Price / Earnings	16.3x
Price / Book	1.8x
EV / EBITDA	5.5x
Price / Cash Flow	24.5x
Dividend Yield %	3.65%

Investment Profile



Price Returns	Basket	Russell 3000
3 Month	↑ 14.8%	↑ 6.1%
6 Month	↓ -5.4%	↑ 9.1%
1 Year	↑ 8.0%	↑ 27.6%

Style Map





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4. Production Issues & Supply Constraints: Multiple copper producing countries face domestic issues. Chile faces domestic protests, while Zambia and the Congo face the risk of a lack of hydropower and increased mining taxes. A supply disruption could lead to increased copper prices.

WHAT'S NEXT?

It's difficult to predict precisely what will happen due to the volatile geopolitical sphere. Inflation, trade issues, and political unrest can change at any moment. However, there are multiple copper catalysts waiting in the corner: EV growth, expansionary fiscal and monetary policies, and potential supply disruptions. In our view, the risk in the copper market is supply falling short, not demand falling short. A positive development in just one of the four catalysts could lead to copper price appreciation. **(Note: This is a long-term thesis on copper, which could evolve over the next few years. As a result, this thematic idea is more suitable as a small satellite, tactical position instead of a core portfolio position. For investors less familiar with the copper market, owning an ETF with multiple companies could help lower company specific risk.)**

CATALYSTS ↗

- Electric vehicles and charging infrastructure require more copper than conventional cars
- Domestic issues in Chile, Zambia, and the Congo could create potential supply risks
- Expansionary fiscal policy plus expansionary monetary policy could lead to inflation

Electric vehicles and related charging infrastructure require more copper than conventional cars. The copper is used in batteries, motors, wiring, and charging infrastructure. In 2017, an International Copper Association (ICA) report found an internal combustion engine uses ~50 pounds of copper. The same report found that a hybrid EV uses ~88 pounds of copper, while a plug-in hybrid EV uses ~133 pounds of copper. The ICA estimated 27 million EVs will be on the road in 2027, up from 3 million in 2017. The increase in EVs would raise copper demand from 185,000 tons in 2017 to an estimated 1.74 million tons in 2027. If automakers can lower production costs and advance battery technology/capacity, EV could grow market share vs internal combustion engines. Copper would be a big beneficiary of EV growth.

Domestic issues in copper producing countries could limit copper production. Chile, which accounts for 29% of global copper production, is facing domestic protests. Additionally, aging Chilean copper mines face declining ore grades and will need to increase capital expenditures to maintain production. If Chile's domestic protests lead to a rethink of fiscal policies, the country's copper production could decline. The African countries of Zambia and the Democratic Republic of the Congo each have their own issues. The two countries use hydropower to mine copper. Both countries previously faced droughts that limited hydropower production which slowed copper mining. Zambia and the Congo also each passed increased mining taxes to generate higher tax

KEY RISKS ↘

- Copper prices are difficult to forecast due to economic sensitivity & macro sentiment
- China accounts for 50% of global copper demand
- Unlike other commodities, copper isn't "consumed"; Scrapping impacts supply & demand

Copper prices are difficult to forecast because of their correlation to macro sentiment and global economic growth. Copper is used in many end markets, including building construction, electronics, transportation equipment, consumer products, and machinery. The wide variety of end uses has earned Copper the nickname "Dr. Copper" due to its ability to predict global economic turning points. Owning copper requires making a macro call on the global economy and understanding investor sentiment. Global growth has been soft recently, and investors are concerned it could remain weak. The risk is that copper demand weakens, and investor sentiment turns increasingly negative.

China accounts for roughly 50% of global copper demand, which makes it an important piece of the demand puzzle. 50% of Chinese demand is tied to property construction, while the other 50% of Chinese demand is tied to electric grid spending. That makes Chinese infrastructure policies a big driver of copper demand. In the last few years, China focused on reining in debt. For example, multiple local Chinese governments increased required down payments on second homes. However, Chinese infrastructure policies are changing after Chinese growth decelerated this year. For example, the Chinese government recently instructed local governments to pull forward \$142Bn of their 2020 special bond quota to 2019. In addition, China previously cut real estate registration and mobile traffic fees earlier in 2019 to stimulate demand. The risk is that Chinese growth continues to decline, dragging down the nation's copper demand and



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Catalysts Continued

revenues, which could limit the attractiveness of mining and future industry returns. Analysts usually incorporate a buffer in their annual copper forecasts, but events such as weather disruption and protests are difficult to model. A decrease in copper supply would likely push copper prices higher.

Inflationary pressures could emerge in 2020 due to global monetary and fiscal policies.

Global central banks are cutting interest rates. Governments are increasing public spending. For example, Boris Johnson and Jeremy Corbyn both campaigned on increased spending in recent UK elections. Candidates in the U.S. Democratic primary continue to push for increased taxes and more spending on infrastructure and social programs. Both interest rate cuts and increased fiscal spending are expansionary policies. When combined, expansionary monetary policy and expansionary fiscal policy tend to result in higher economic growth. Higher economic growth could spur inflation. Copper tends to be a good inflation hedge.

Key Risks Continued

pressuring global copper prices.

Unlike other commodities, copper is not "consumed". Copper is one of the few commodities that can be recycled without losing performance. Due to concerns about the environmental impact of mining, policymakers and various stakeholder groups are focused on increasing copper's reuse. While recycling copper creates a more sustainable world, it doesn't fully close the copper use loop. The first reason is that copper demand is forecasted to increase as the world population grows and new products are developed. Secondly, most copper products use copper for decades at a time. Thus, while copper scrap policies impact the market in the short-term, the longer-term trend calls for continued copper production.



Copper Basket

FIGURE 1: 1-Year Performance vs Russell 3000



FIGURE 2: Market Breadth & Fundamentals

		Current	1Y Avg
200dma Spread	↑	3.5%	-5.8%
14d RSI	↑	68	50
% Advancing	↑	60	52
% Declining	↓	40	48
NTM P/E Ratio	↑	16.3x	13.4x
NTM Net Margin	↓	10.0%	13.6%
NTM Div Yield	-	3.65%	3.65%
NTM EPS	↓	\$3.99	\$5.26

FIGURE 3: Attribution by Sub-Industry (1-Year)

Top (% chg)

Metals/Mining 45%

FIGURE 4: 5dma of 14-Day Relative Strength (RSI)

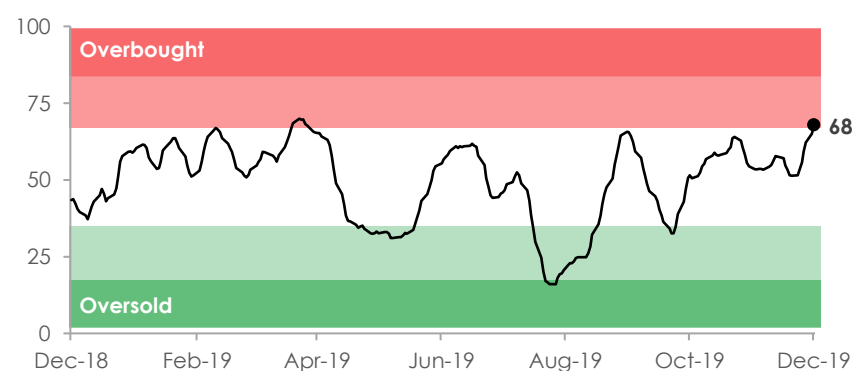


FIGURE 5: 10-day Net Advance / Decline Line

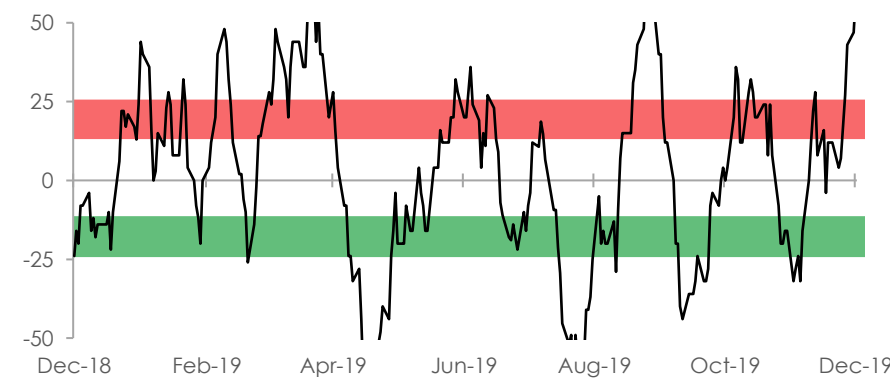


FIGURE 6: Attribution by Stock (1-Year)

Top (% chg bps)			Bottom (% chg bps)		
SCCO	42%	+860	GLNCY	-14%	-272
RIO	24%	+636	TECK	-18%	-322
FCX	28%	+419			

FIGURE 7: Direction of Next Year's EPS Revisions

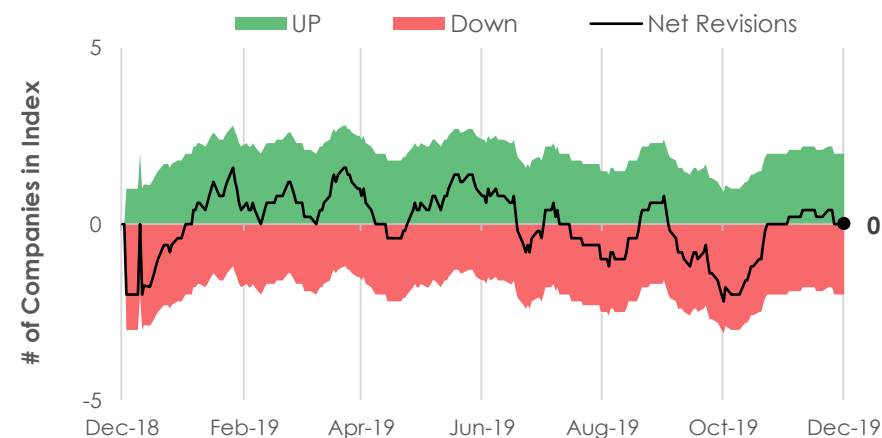


FIGURE 8: Annual Growth Statistics

Item	10Y History	3Y Avg	2020e	1M % Chg
Sales		7.6%	1%	-
EBITDA		15.0%	25%	-
EBIT		54.9%	75%	-
Net Income		32.4%	229%	-
EPS		31.4%	243%	-
Dividends		79.2%	FALSE	↑ 2.9%
BVPS		8.2%	8%	-
FCF		93.4%	0%	↑ 2.8%

FIGURE 9: Relative Valuations

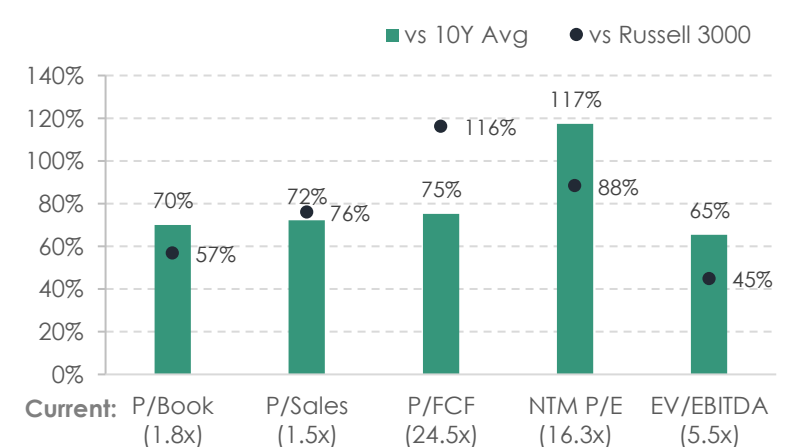








Figure 10

Basket Holdings by Sub-Industry

Holdings by Sub-Industry														
Ticker	Company	Sector	Market Cap (\$M)	Avg Daily Vol (3mo)	Wall Street Rating	Wall Street Price Target	Profitability (NTM EBITDA Margin)	Leverage (Debt / EBITDA)	Valuation (EV / NTM EBTIDA)	Cash Flow Yield	52W Range	Performance		
												1W	6M	1Y
Companies														
Impacted Stocks														
RIO	Rio Tinto plc Sponsored ADR	Materials	73,566	1,840,250	Buy	\$73	-	0.8x	4.7x	8.1%		2%	-2%	24%
FCX	Freeport-McMoRan, Inc.	Materials	18,862	23,847,264	Overweight	\$14	23.9%	1.6x	9.0x	12.6%		0%	16%	28%
SCCO	Southern Copper Corporation	Materials	33,127	709,540	Hold	\$38	48.2%	1.7x	10.6x	4.7%		4%	12%	42%
TECK	Teck Resources Limited Class	Materials	9,472	3,174,156	Buy	\$25	35.2%	0.9x	4.2x	8.7%		2%	-24%	-18%
GLNCY	Glencore plc Unsponsored A	Materials	41,604	187,915	No Rating	-	-	2.5x	-	15.6%		4%	-12%	-14%

Figure 11

ETFs to Own Instead of Single Name Stocks

Own Instead of Single Name Stocks													
Ticker	Fund	AUM (\$M)	Avg Daily Vol (3mo)	Expense Ratio (%)	# of Holdings	Profitability (NTM EBITDA Margin)	Leverage (Debt / EBITDA)	Valuation (EV / NTM EBTIDA)	Cash Flow Yield	52W Range	Performance		
											1W	6M	1Y
ETFs													
Industry & Commodity Funds													
COPX	Global X Copper Miners ETF	86	76,790	0.65%	28	21.2%	3.0x	6.4x	2.9%		0%	-2%	7%
FM	iShares MSCI Frontier 100 ETF	508	86,239	0.81%	107	-	2.2x	7.0x	-		0%	4%	15%
CPER	United States Copper Index Fund	9	7,646	0.80%	24	-	-	-	-		0%	5%	6%
JJC	iPath Series B Bloomberg Copper Subindex T	14	3,267	0.45%	-	-	-	-	-		0%	5%	6%



Definitions

Daily Moving Average (dma): A daily moving average is an simple moving average calculated by adding the closing price of the security for a number of time periods, and then dividing this total by the same number of periods. **Overbought / Oversold (OB/OS):** OB is short for Overbought. OS is short for Oversold. Overbought (Oversold) = +1 Standard Deviation Above (Below) 50dma. **Relative Strength (14d RSI):** The relative strength index (RSI) is a technical indicator used in the analysis of financial markets. The RSI is most typically used on a 14-day timeframe, measured on a scale from 0 to 100, with high and low levels marked at 70 and 30, respectively. **EPS:** Earnings per share is the portion of a company's profit that is allocated to each outstanding share of common stock, serving as an indicator of the company's financial health. **P/E Ratio:** The price-to-earnings ratio is the ratio for valuing a company that measures its current share price relative to its EPS. **52W High / Low:** A 52-week high/low is the highest and lowest price at which a stock has traded during the previous year. **Street Rating:** The average stock rating across Wall Street in which analysts rate a stock outcome from positive to negative in the following order: Buy, Overweight, Hold, Underweight, Sell. **Basis Point (bp):** A unit of measure used in finance to describe the percentage change in the value or rate of a financial instrument. One basis point is equivalent to 0.01% (1/100th of a percent).

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