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DISTINGUISHING TREMORS FROM SHOCKS IN SUPERCYCLE 2000

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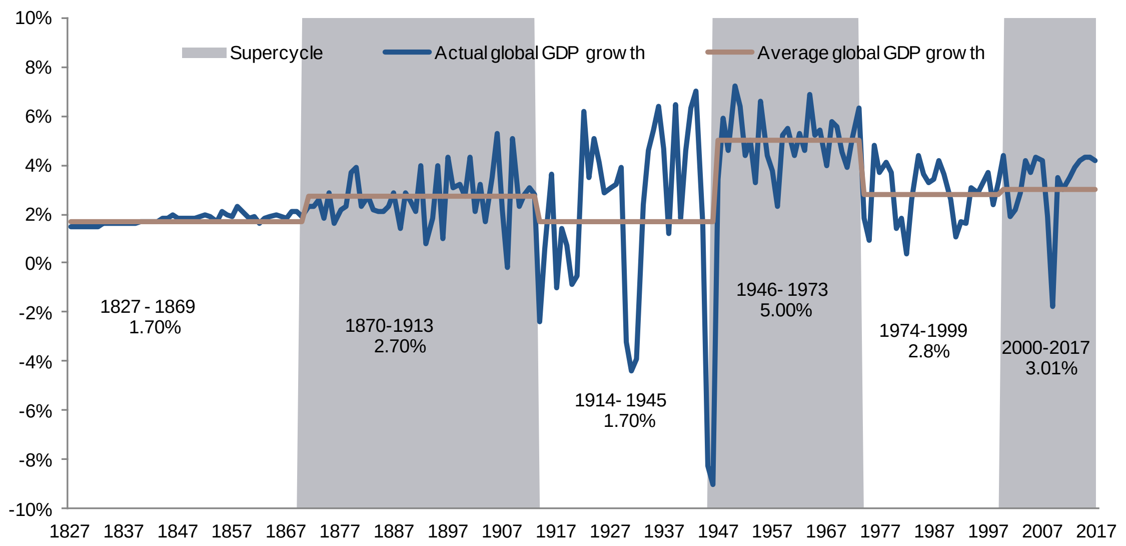
SOCIETE GENERALE
Cross Asset Research

SUPERCYCLES HAVE A HISTORY OF BEING JUST THAT...CYCLES

Supercycles are periods of high growth lasting decades driven by massive urbanisation rates, increases in population, technological innovation, increased trade and high rates of investment. High urbanisation and growth in middle classes in developing regions have a particularly big impact on demand for commodities.

When a supercycle has previously ended it was because of a disastrous shock, not a gradual slowdown in the global economy.

The history of commodity super-cycles

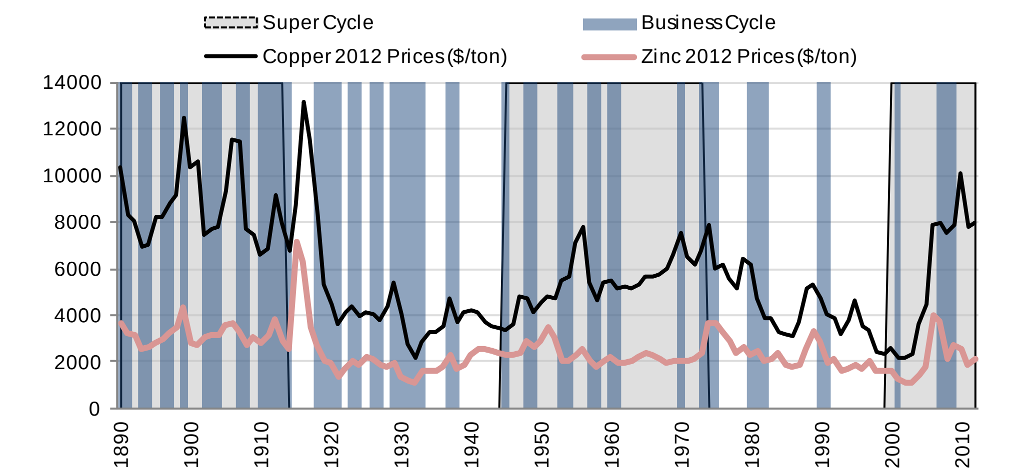


Source: SG Cross Asset Research

- **First supercycle started in 1870 and ended at the start of WWI. The US was the significant beneficiary, becoming the world's largest economy in this time period (technologies associated with the Industrial Evolution were the main driver)**
- **1946 to 1973 was the second supercycle. Function of post-war reconstruction, the baby boom, and the emergence of large middle class in Asia. The 1973 oil crisis choked off this cycle – a rapid spike in oil price being enough to seriously depress growth.**
- **Third commodity supercycle began rise in 2000 as the impact of suspensions and cancellations of projects started to manifest as demand re-accelerated; prices began to rise. 2008 Financial Crisis triggered a significant pause, but the demographic forces were too strong to allow the financial crisis to halt the commodity supercycle. With so many shifts in commodity prices happening, where is the supercycle now?**

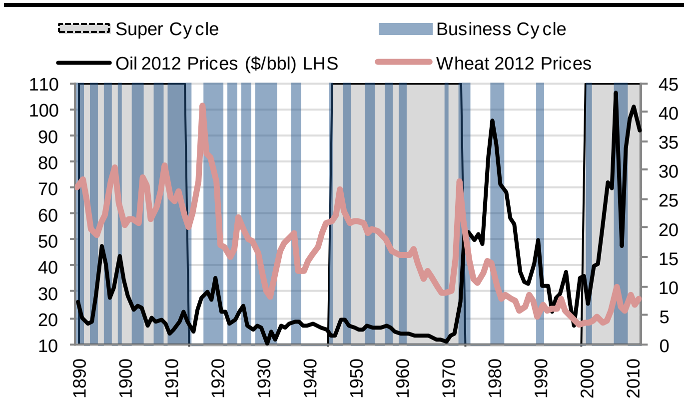
NO TWO CYCLES ARE ALIKE; COMMODITY BEHAVIOUR PROVES THAT

Copper and Zinc prices in real terms since 1890

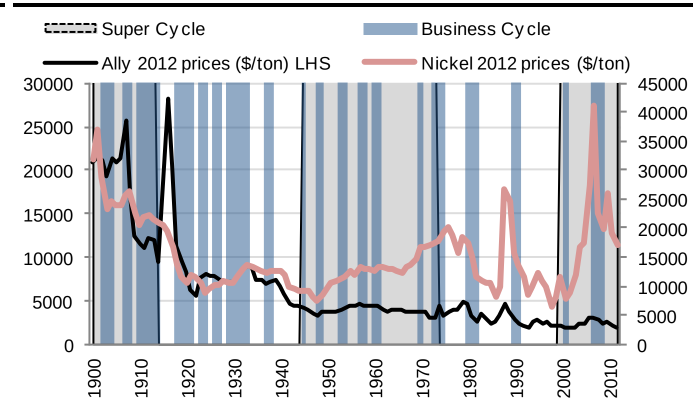


Source: SG Cross Asset Research

Oil and wheat in 2012 prices



Aluminium and Nickel in 2012 prices



Source: SG Cross Asset Research

- **Contributing factors include price controls, investments levels, supply variance and technological innovations.**

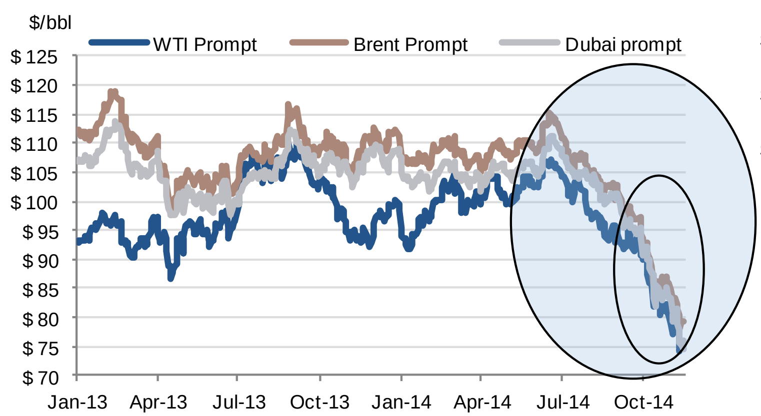
Sources: Bloomberg, USGS, US Dept of Labour, Warren & Pearson, US Census Bureau

THE CURRENT CYCLE FEATURES A COMMODITY MOVE TO TALK ABOUT – OIL '14

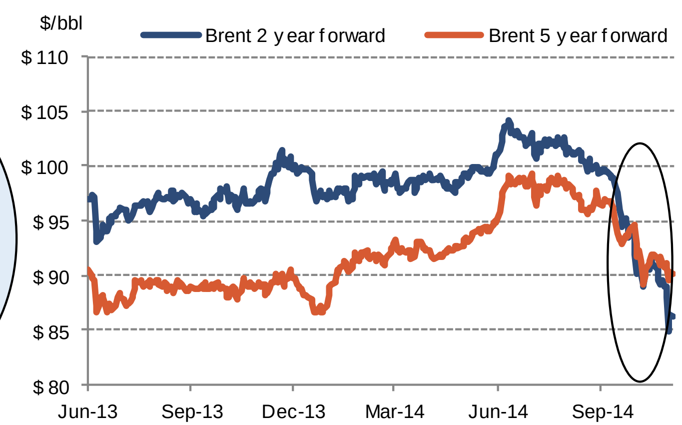
- **On 27 November 2014 OPEC announced that the market should determine the oil price, and the market would stabilize itself. This announcement was not fully priced into the market and Oil fell. What does this mean? Unambiguously bearish – OPEC withdrawing from acting as price controlling cartel is massive. "Welcome to the new world of oil".**
- **Attention shifted immediately, and firmly towards the onshore US, the rise of which has been the game changer. Establishing the sustainable LT price implications in this new world will take time.**

	2012	2013	2014	2015f	2016f	2017f	2018f	2019f
WTI NYMEX ($/bbl)	94.20	97.97	93.00	53.60	60.00	65.00	67.50	70.00
Brent ICE ($/bbl)	111.64	108.75	99.50	59.50	65.00	70.00	72.50	75.00

Crude prices began to decline starting in mid-June but the correction accelerated at the end of September



Distant maturities were somewhat resilient until late September – that was the tipping point



Source: SG Cross Asset Research

A CHANGED OIL WORLD RIPPLES THROUGH COMMODITIES…

EUROPEAN NATURAL GAS

- The market is directly a function of oil prices due to prices being set via oil indexation.

CORN

- is the most directly affected agricultural commodity in times of falling oil prices. Lower energy costs help to decrease the cost of production and encourage increased plantings for the next season. Lower fuel costs also lower transportation costs which lowers the delivered price of corn in physical markets. This puts pressure on corn prices.
- Longer term, Lower energy prices increase demand for gasoline as the economy eventually grows which increases the demand for corn to produce ethanol, an additive blended with gasoline.

COTTON

- has the largest per-acre energy costs, as a large portion of the US cotton crop is irrigated. A drop in oil prices to $70 results in a decline in cotton prices over the year by 6.75%.

GOLD (a key hedge against inflation risks)

- Less incentive to hold gold In a period of likely disinflation (perhaps even deflationary) due to lower oil prices.
- Oil and Gold have once again become co-integrated with expected inflation and a simulation of an oil environment of $70 means both an expected inflation and Gold decline. We estimate that Gold could drop by as much as 5% in the first three months of a lower price environment.

ALUMINIUM (most energy-intensive industrial metal to produce with power costs at 40% of total production costs)

- The IAI estimates, more than half of the world's aluminium was produced using thermal coal; impulse response simulation on **COAL** suggests a drop in oil prices to $70 results in coal prices falling by 3% over first six months before recovering due to increased demand.
- Overall translates into little impact for aluminium costs with any cost curve impact likely to be more than offset by global GDP growth.

Limited impact on other industrial metals from lower oil prices

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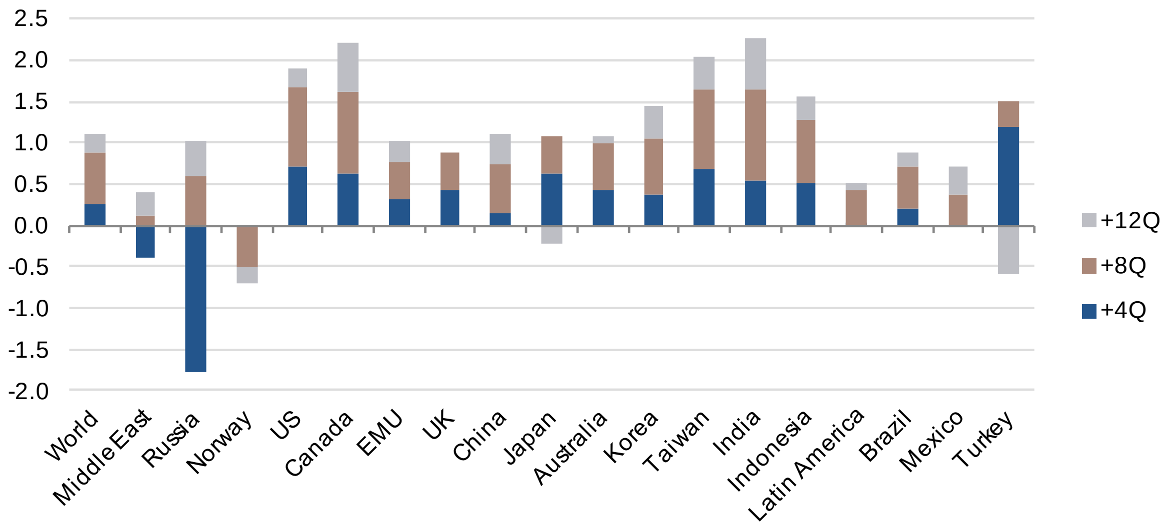
…AND THROUGH ECONOMIES

- **$20/b decline in the oil price adds 0.26pp to World GDP after the first year of the shock. The US, Canada and a number of Asian producers stand to win the most from lower oil prices. These differences are explained by a number of factors, including the share of oil energy in the consumption basket and the importance of commodity exporters in individual countries' international trade.**
- **Caveats: Adds stress to some countries - Russia. Positive multipliers may be lower due to high debt levels. Fewer petrodollars.**

Cumulated impact on GDP from a $20/b decline in oil prices

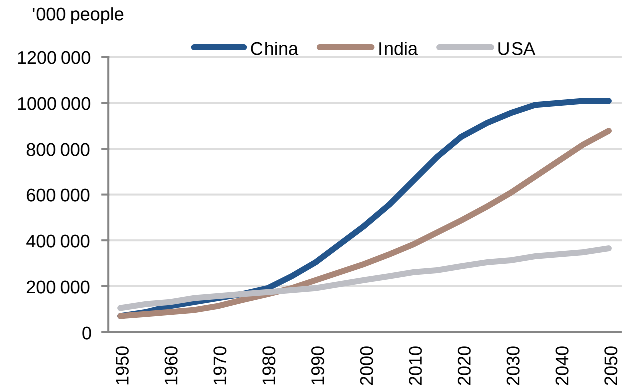


Source: NiGEM, SG Cross Asset Research/Economics

BUT THESE RIPPLES DON'T DEFINE THIS SUPERCYCLE; URBANIZATION DOES

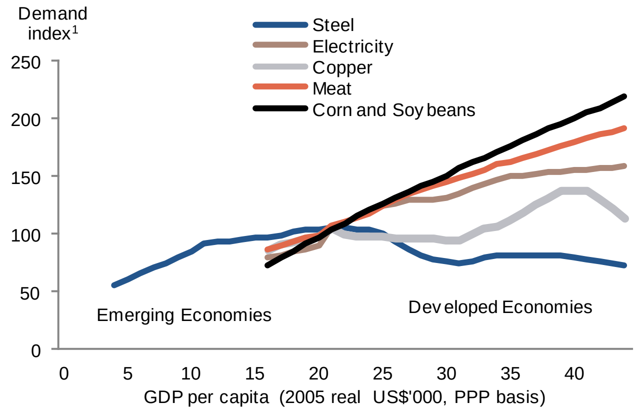
- **According to the UN 5 billion people will live in cities by 2030, compared to 3.4bn now**

Total number of urban citizens 1950 - 2050



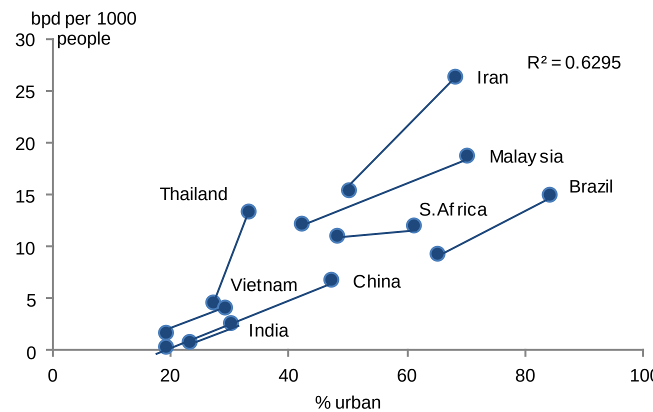
Source: World Bank, Brook Hunt, CRU, IISI, Global Insights, CISA, Worldsteel, JBS, BHP Billitopn, United Nations, SG Cross Asset Research

Commodity intensity evolves with economic development

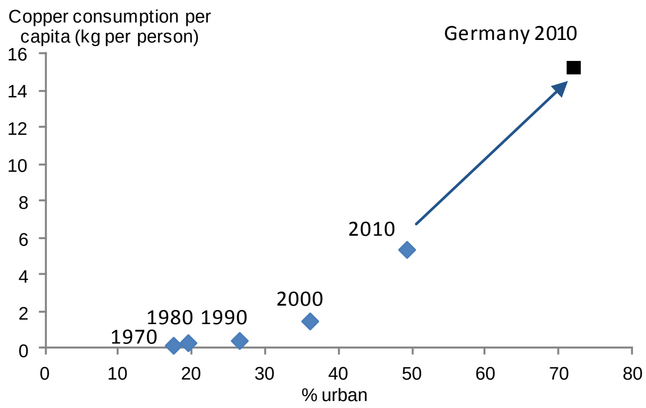


1The demand intensity index represents the volume consumption per capita consumption, 1968 as 100 for each of the commodities, based on the USA experience.

Energy consumption v percent of the urban population



Chinese copper consumption per capita v urbanization rate

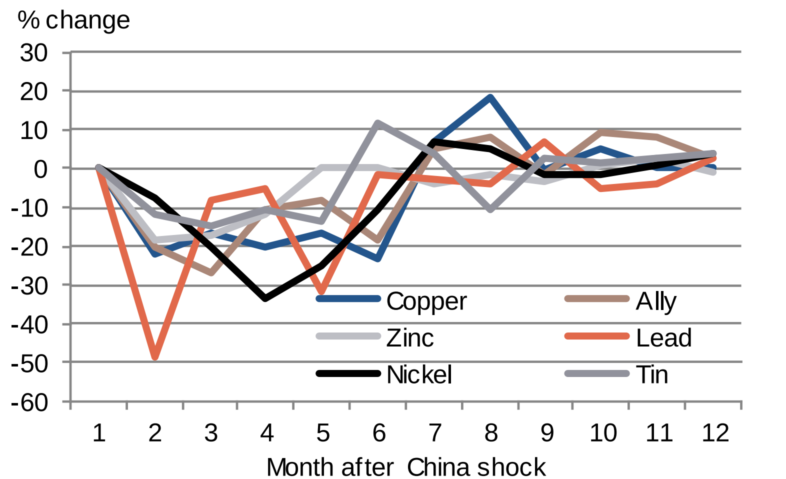


Source: SG Cross Asset Research, US DOE, United Nations, USGS

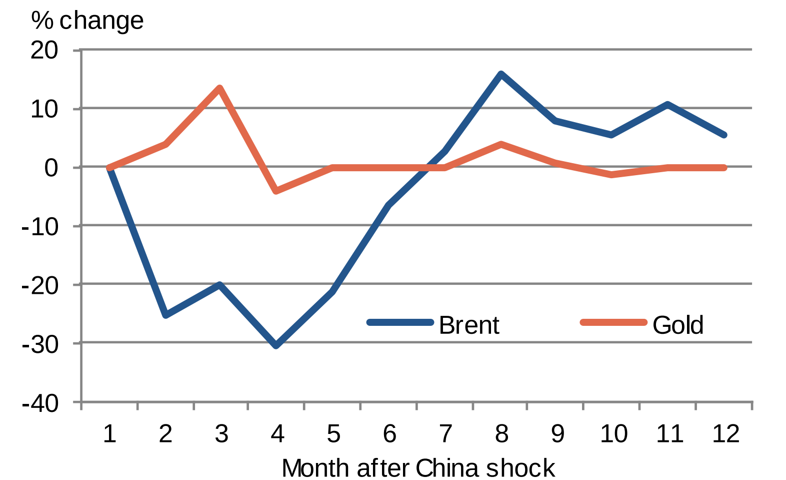
A CHINA SHOCK TO COMMODITIES WOULD BE HUGELY SIGNIFICANT AND MEAN SOMETHING ENTIRELY DIFFERENT TO THE SUPERCYCLE

- **Here we use monthly Chinese PMI data and CTY prices and shock PMI's down to a level similar to that experienced with the Lehman bankruptcy (down 40%).**
- **We trace out the effect on prices over the following 12 months.**
- **Oil: When we focus on Brent oil (right hand side), we see a large and significant drop in prices, bottoming out by the fourth month and rebounding shortly thereafter. A 30% drop in oil prices (which equates to approximately $30 given the current value of Brent) would ultimately boost GDP growth over the year and hence pull oil prices higher (as our empirical data here would predict).**

Impulse responses of the base metal complex from a significant drop in Chinese PMIs.



Impulse responses of Gold and Brent from a significant drop in Chinese PMIs

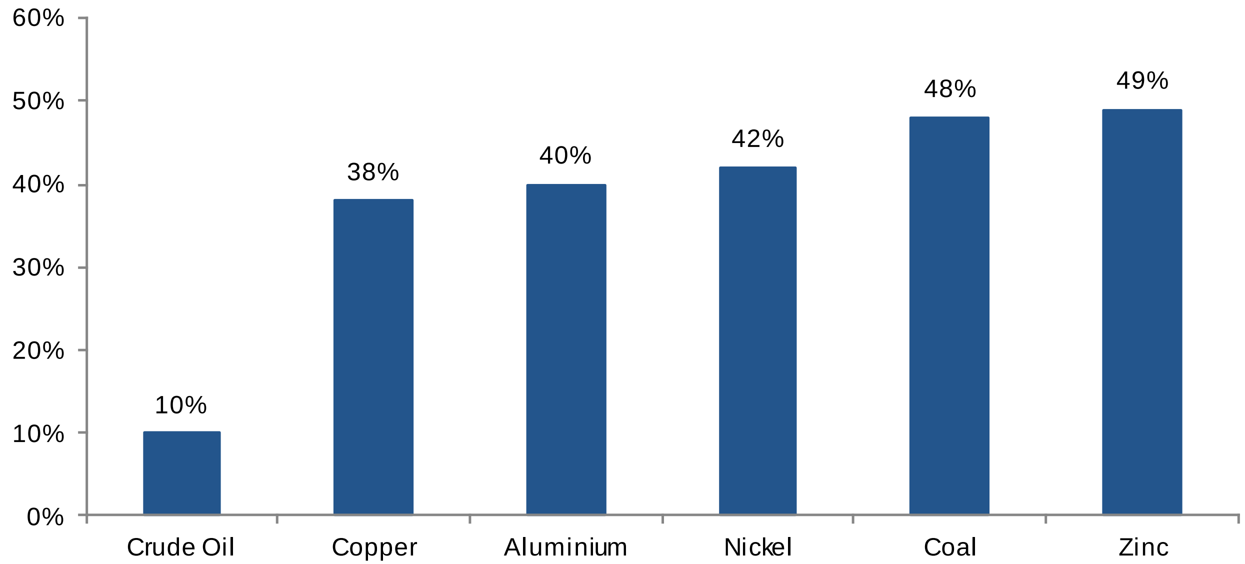


Source: SG Cross Asset Research

THE EXISTENCE OF THIS SUPERCYCLE RESTS ON CHINA'S SHOULDERS

- **China is, quite obviously, a large consumer of a broad range of primary commodities with consumption in recent years accounting for approximately 40 percent of base metal consumption, 23 percent of major agricultural crops and 20 percent of non-renewable energy resources.**
- **A hard landing would have less direct consequences but huge ramifications on global investor confidence, creating turmoil throughout financial and broader commodity markets thereby exacerbating all commodity price moves.**

Chinese consumption of global production



Source: United Nations COMTRADE database, World Metal Bulletin Statistics, SG Cross Asset Research

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