

HOW SUPER
IS THE
COMMODITY
CYCLE?

DANIEL JERRETT, PHD
CHIEF INVESTMENT OFFICER
AUGUST 2021

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WHAT IS A SUPER CYCLE?

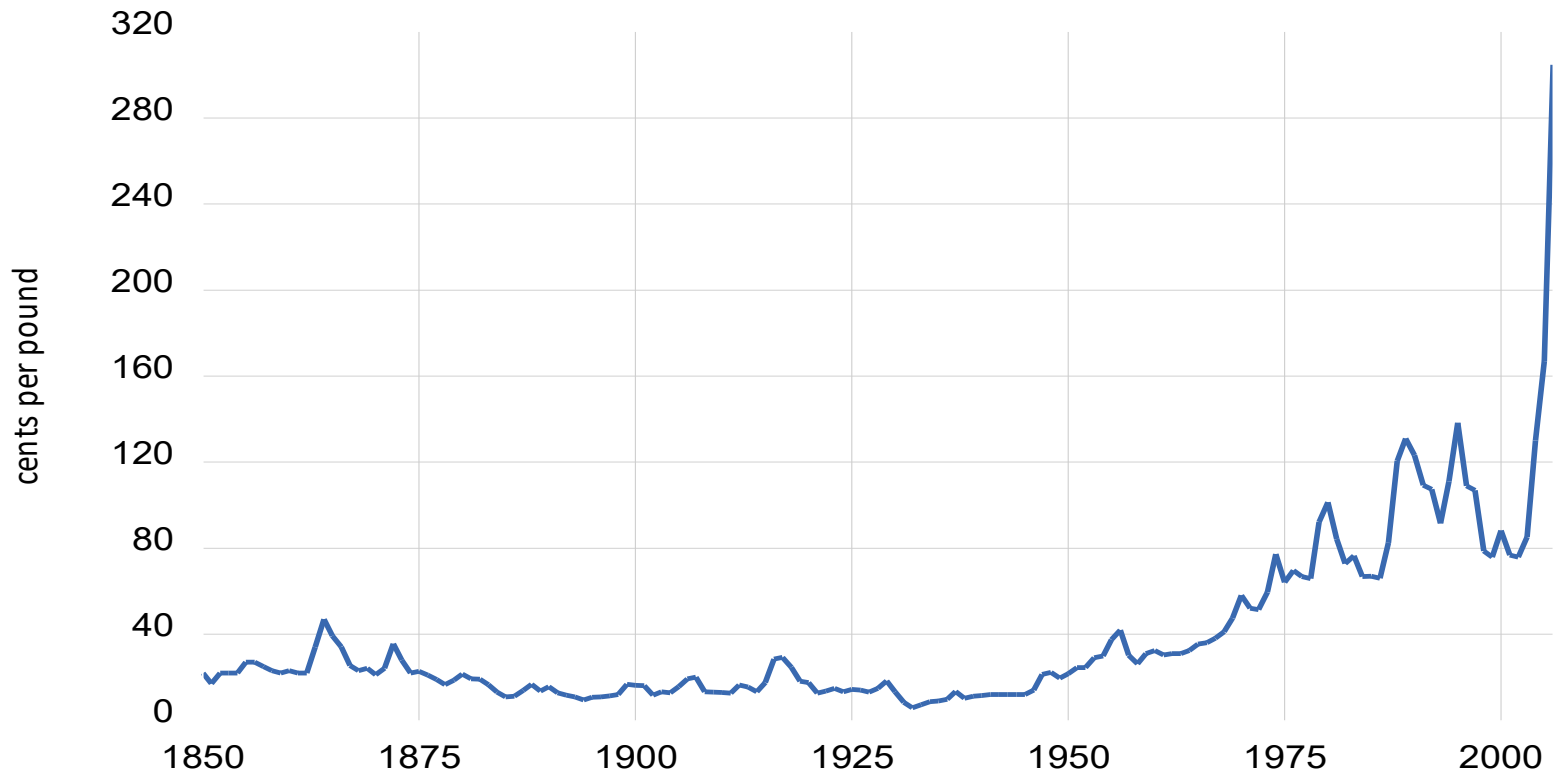
It began with a hypothesis. In early 2005, former Citigroup Director, Alan Heap declared that a “super cycle is underway, driven by material intensive growth in China.

What does it mean to be super? Heap’s analysis suggested that super cycles have two unique features: (1) prolonged cycles with expansions of roughly 10-35 years (suggesting full cycles of 20-70 years) and (2) broad-based, affecting a wide range of commodities.

Sometimes history repeats itself. Heap said that there had been three super cycles since the late 1800s occurring during the U.S. industrialization, post-war reconstruction in Europe followed by Japan, and the industrialization and urbanization of China beginning in the early 2000s. All were demand driven.

CASE STUDY | Nominal copper price (1850-2006)

Identifying cycles of any periodicity is not an easy task when looking at nominal prices over time.



HOW ARE SUPER CYCLES MEASURED

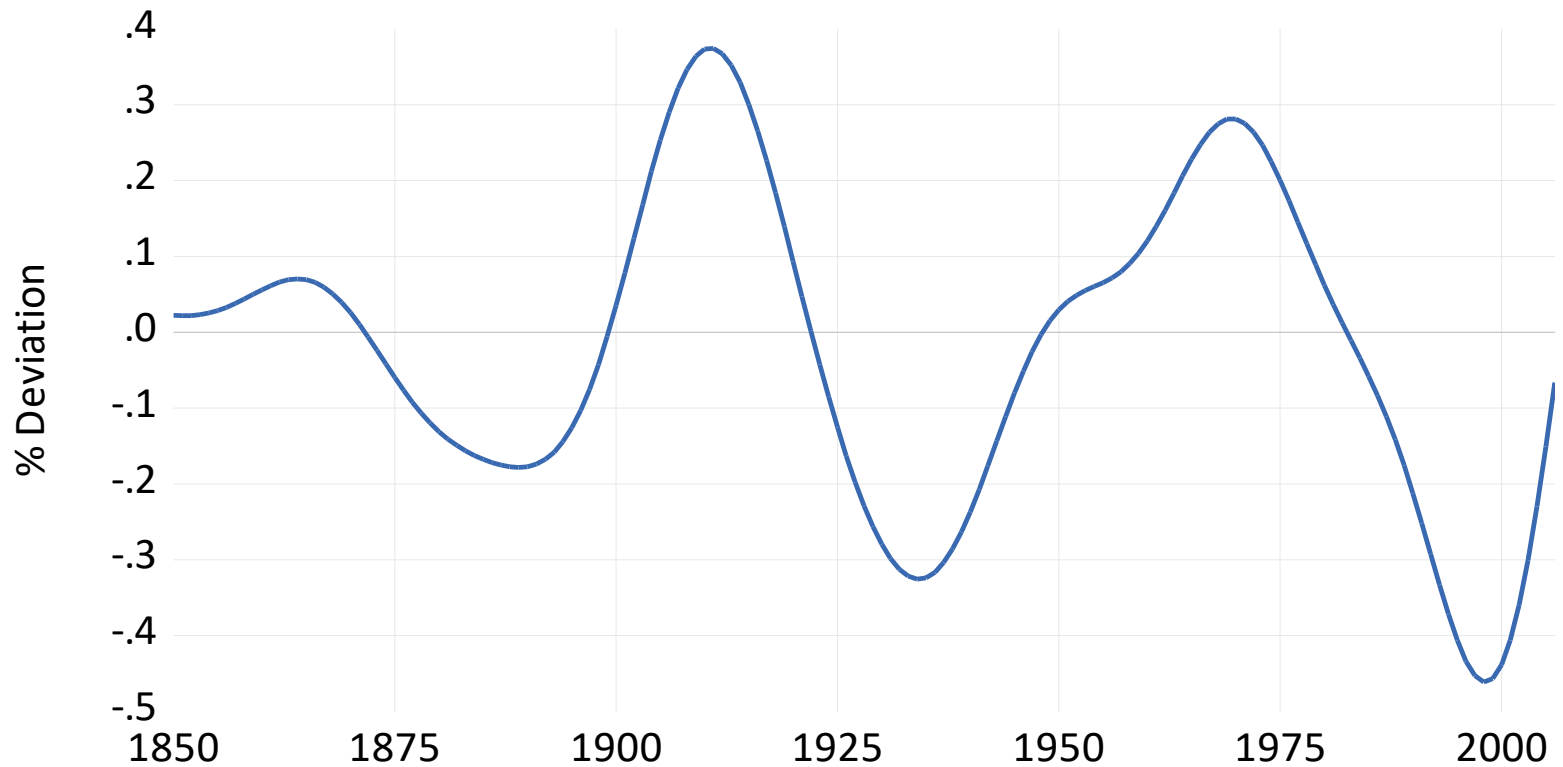
Let data drive the story. To borrow a phrase once used about business cycles, it can be said that "the study of [super] cycles necessarily begins with the measurement of [super] cycles" (adapted from Baxter and King, 1999).

On the hunt for cycles. Band-pass filters were used to extract cyclical components as well as the long-run trend from a 150-year data set of real metals prices. The filtering technique found evidence supporting the hypothesis that three super cycles had occurred over the past 150 years and the amplitude of the super cycles was large with variations of 20 to 40 percent above and below the long-run trends.

Moving or co-moving? Principal component analysis (PCA) was used to measure the amount of co-movement in the group of metals. If a super cycle is being driven by broad-based economic growth, one would expect to see commodity prices moving together. PCA can be used to measure the importance of unobservable common factors affecting the super-cycle components.

SUPER CYCLE | Real copper price (1850-2006)

The super-cycle component of the real price of copper is interpreted as above/below trend percentage-change deviations from the long-run trend.



ARE ALL CYCLES SUPER?

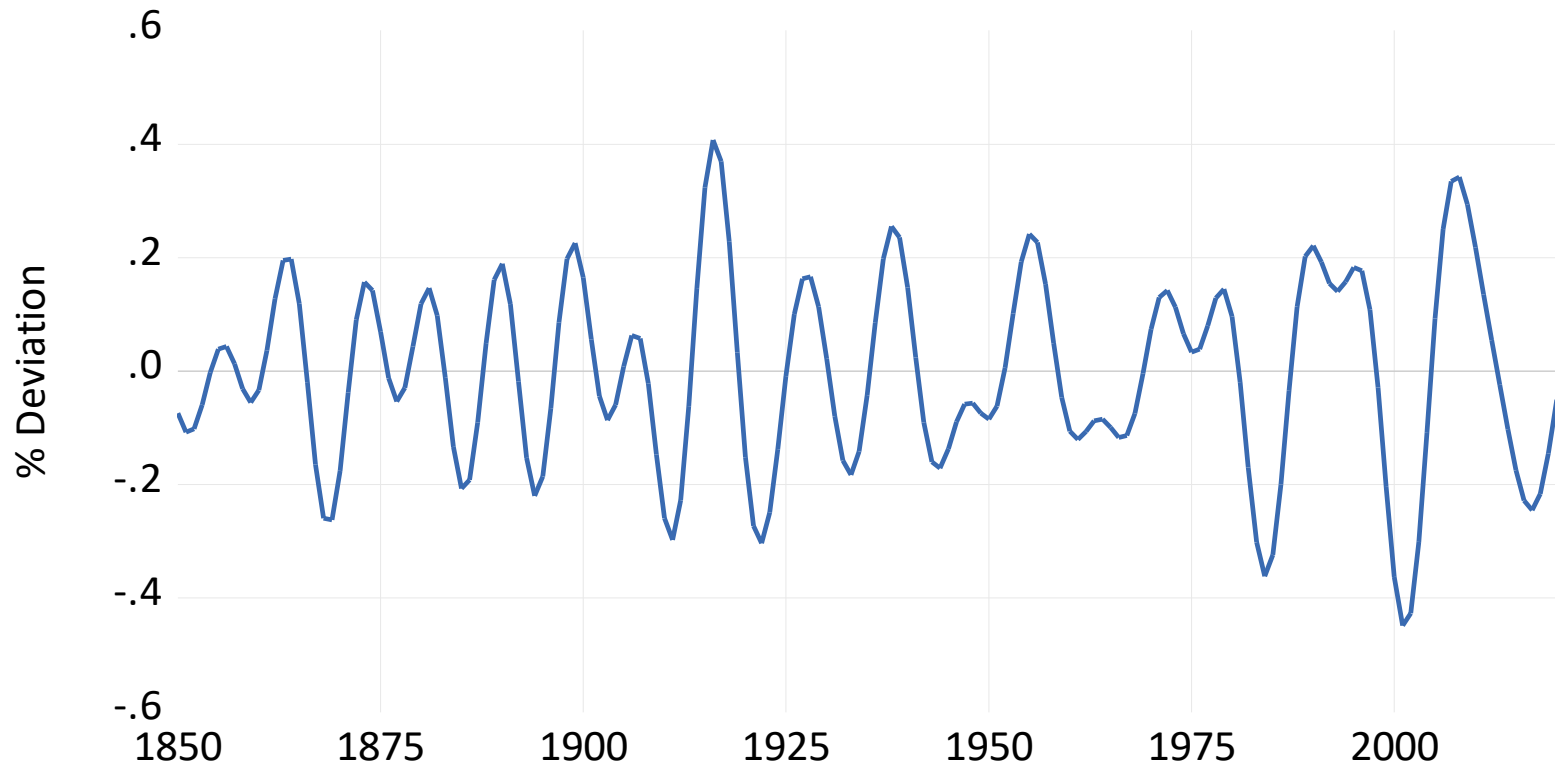
Early 2000s super-cycle redux? After almost a decade of little to no discussion of super cycles and depressed commodity prices, late 2020 saw increased demand and prices for a broad set of commodities.

Oh right – a pandemic. The business-cycle impacts of the Covid19 induced recession and subsequent recovery could have played a role in the rapid increase in commodity prices over the past year. A recovery led by China, low LME stocks, and a weaker dollar were all present over this timeframe.

Are other cycles at play? Band-pass filters allow you to isolate cycles of any frequency. Not only can you look for super cycles, but you can also filter for business cycles and intermediate cycles of varying length. The investment cycle in metals specifically, matches well with an intermediate cycle of 8-20 years.

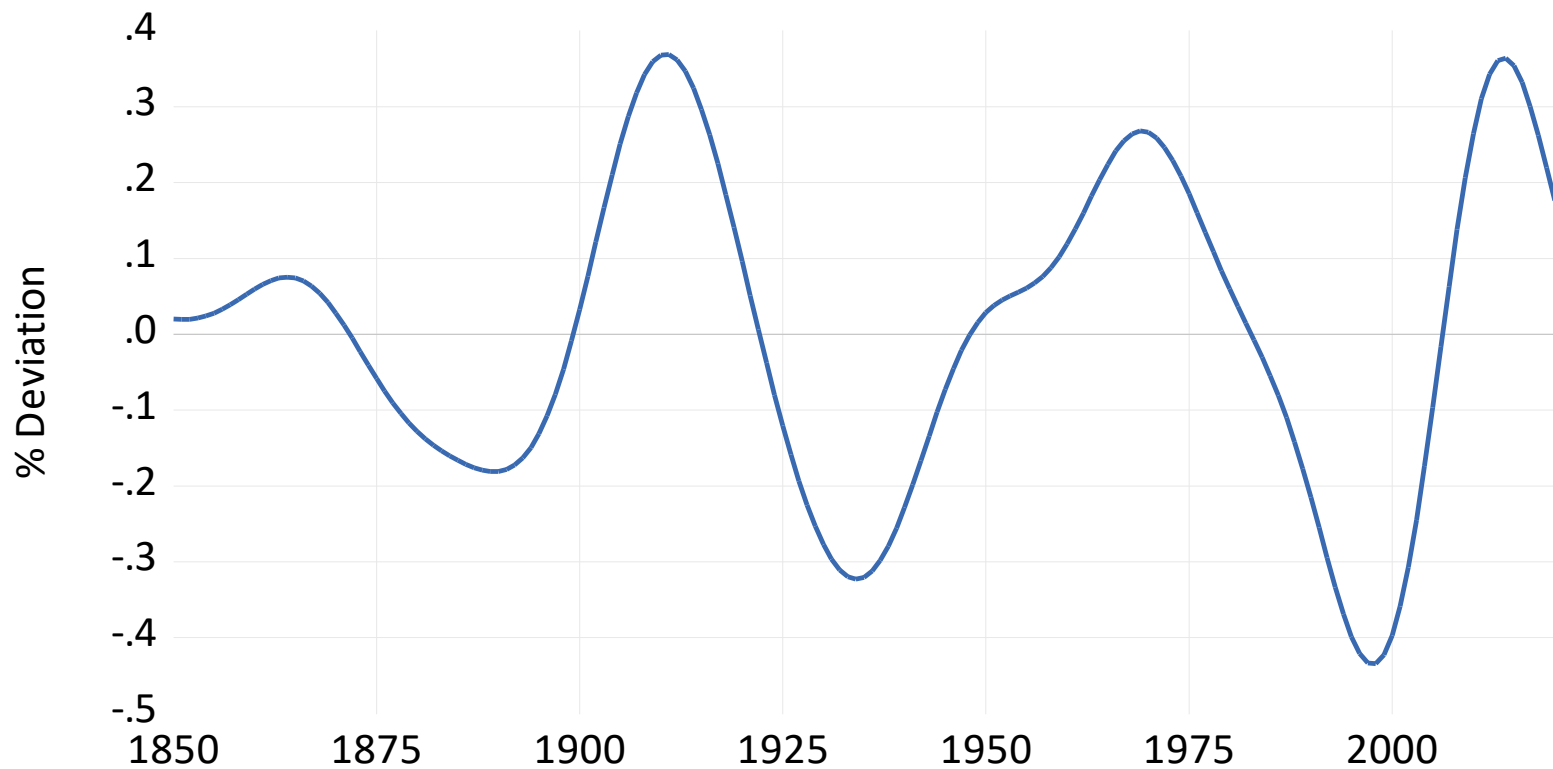
INTERMEDIATE CYCLE | Real copper price (1850-2020)

The spectral representation theory ensures that a time-series can be decomposed into one or more cyclical frequencies and the original series can be recovered.



SUPER CYCLE | Real copper price (1850-2020)

Business and intermediate-cycle components can be moving in opposite directions to the super cycle for sustained periods of time.



WILL THE NEXT SUPER CYCLE BE GREEN?

2021 and beyond. The emergence of the discussion of a de-carbonization/green-led super cycle cannot be ignored. The larger question is when will this forthcoming trend gain momentum and put sustained pressure on the demand for minerals and energy?

What will it take to get there? A global commitment to green-led growth could create the necessary supply-demand conditions to see decades-long increased demand for many commodities, both mineral and energy. Under investment in exploration and production, decreasing ore grades, geopolitical positioning of reserves, and future uncertainty are all considerations that must be included in the analysis.

Redefining super cycles. Future super cycles may look different. The original hypothesis of cycles being broad based may change to select groups of commodities required for specific end uses such as electrification driving super cycles.

KEY TAKEAWAYS

Measure first. A necessary condition to understand and analyze any economic event is to first measure and have a baseline for comparison. “Super” means very different things to different people.

Apply frameworks. Building a consistent and repeatable framework assures a disciplined approach to ever-changing economic, geopolitical, and social conditions. The early 2000s look very different from current conditions.

Think forward. Future cycles may look different than the past 3 and adapting the framework and hypothesis may be necessary.

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DANIEL JERRETT, PHD
CHIEF INVESTMENT OFFICER
STRATEGY CAPITAL | LP
DJERRETT@STRATEGYCAPITAL.COM
STRATEGYCAPITAL.COM