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25 May 2021

China Market Strategy

The Long Waves in Commodities: Three Centuries of Evidence

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- History is price, and prices move in waves. With three centuries of historical commodity price data meticulously collated by our predecessors, we are able to take a leap back to the distant history and construct our proprietary wave index. The wave structure in this proprietary index spanning over 300 years is immediately palpable, without any statistical "sleight of hand". The structures are like convex arcs, like fully-drawn bows ready to be unleashed, ascending amid the torrents of historic events. We deliberately plot levels instead of changes, as the change in prices evident in the shifting slopes of our index is a record of history.

- We have identified four long waves since the late 18th century. These waves tend to crest at the peak of prosperity, and roughly coincided with each of the three industrial revolutions. While monetarists, Marxists and Malthusians have offered different perspectives on the formation of these waves, none is all-encompassing. Further, unlike cycles that fluctuate with regularity, wave length is not well defined but with striking structure. Despite these ambiguities, all waves are concurrent with population growth, or improvement of living standards, or both raising the level of aggregate demand.

- We are not at the cusp of a new "commodity super cycle". Indeed, we are already engulfed deep in the fourth long wave since the late 18th century. That said, to the best of our knowledge, it is not clear what will be the catalyst for aggregate demand to eventually complete the fourth wave. After all, the developed world has grown old, and the latest demographic survey in China has revealed some disquieting trends. But the global return on capex is rising, and Biden is ambitious. If our observations of the long wave structure are apposite, a period of elevated and intense commodity price movements is ahead.

- Long waves are more narrative than predictive. The wave structure can herald the trajectory of the future, but is somewhat inept in forecasting inflection points in the short term. Our quantitative model of economic short cycle will fill the void. Indeed, our proprietary leading indicator of economic short cycle is peaking, suggesting a cycle turning point later this year, and the current pace of economic expansion is set to moderate. Meanwhile, earnings estimates of many cyclical sectors are rolling over. History suggests that, while commodities may see new highs ahead, the easiest money has been made.

- China's upstream price pressure has yet to flow downstream. Already, China is jawboning the commodity surge. From price and net futures position, we detect sporadic but not yet prevalent speculative fervor. The "shouting" from the top has hit commodity trading hard, but it will probably take a few more rounds to eventually extinguish the zeal, like in 2016 and 2017. When Nixon wanted to freeze price for the second time, he was warned that "one can't step in the same river twice." To which Nixon replied, "You can if it is frozen". Of course, we all know how that movie ended.

The Long Waves in Commodities: Three Centuries of Evidence

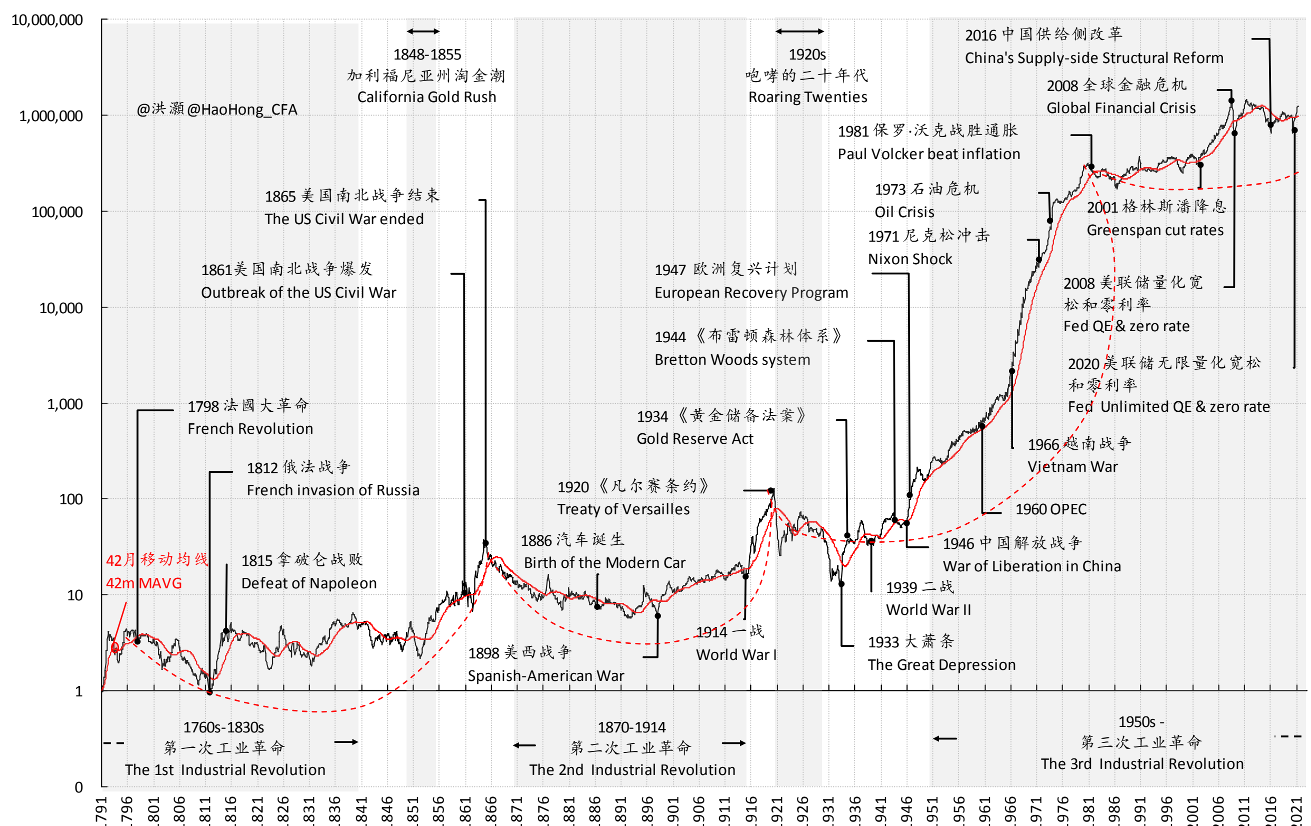
The Long Waves

"The most common qualification of the economic forecaster is not in knowing, but in not knowing that he does not know. His greatest advantage is that all predictions, right or wrong, are soon forgotten." --- John Kenneth Galbraith

Are we at the cusp of a commodity super cycle?

To answer this question, we must first look at what price is, and the meaning of price change. For Malthusians, price change suggests an imbalance of supply and demand, and any market equilibrium will be transient. For monetarists, price is simply a record of the changing value of money. For Marxists, price change suggests a social system within which the fruits of economic growth are being shared by different social classes. For historicists, price change marks the underlying social movements, with price volatility suggesting concurring social revolts, and vice versa.

Figure 1: The long waves in commodities



Source: BOCOM Int'l

In short, price and price change can be studied from various perspectives. But once we take a leap of imagination and canvass historical price data into the distant past, we find the history of price ladened with historic events. From this vantage point, price is history. And any study rooted in decades, instead of centuries of price data, and any conclusions drawn from such somewhat frivolous studies are likely to be imprudent.

Further, we caution against the application of a "super cycle" to predict the impending moves of commodity prices. Yes, the recent commodity revolts are violent enough for some pundits to succumb to the temptation of linear extrapolation. After all, when all is said and done, economic models all come down to circles and lines. Yet, using a "super cycle" spanning many years to forecast the price moves in the coming months is tantamount to shooting mosquitos with cannons.

As one of the pioneers to conduct quantitative studies on economic cycles in China, we have been inquired by many to shed some light on the recent commodity surge. When we published our second half outlook in June 2020, we were among the first to herald a looming surge in commodity prices and cyclical stocks, and thereafter inflation expectation. In my best-selling book titled "***Forecast***" published by the CITIC Press Group last year, I have discussed in-depth how a changing global economic system will soon induce a commodity surge. Now, history is flashing right before our eyes.

Our Proprietary Wave Index and Findings

To answer the question that we posited at the beginning of this report, we must take a leap back into history to collate price data. Fortunately, since the mid- and late 18th century, complex data indices have been constructed by various entities around the world laboriously. And these data indices have been growing ever more precise and elaborate.

From these efforts of our predecessors, we are able to collect price series of major commodities, such as zinc, tin, coal, oil, tea, cocoa, iron, cotton, sugar, gold, silver, copper, etc, all the way back to late 18th century. Applying the recalibrated index weight from the Commodity Research Bureau (CRB), we then aggregate these commodity prices into a proprietary commodity price index spanning over three centuries. Such extended time series have elevated us to an altitude from which surveying the landscape of history is easier.

In **Figure 1**, we simply plot our proprietary commodity price index on a log-scale chart. The wave structure is immediately visible to any naked and untrained eyes. Indeed, we would argue this is the evidence that the long waves exist in the price structure of commodities concurrent with economic activities.

Such wave structures, unlike the economic cycles that we will revisit later in this report, do not require any sophisticated statistical techniques. They do not entail any "detrending" or "filtering" to suppress the noises inherent in any short-term price data – a quasi-statistical "crime" we may have committed when we tried to establish our quantitative theory of Chinese economic cycle, and then apply it onto the global scale. The wave is right there for all to witness. It is epistemic.

We can make some observations on these long waves in the past three centuries:

(1) The long wave in commodities can span many decades, if not a century. That said, the length of these long waves, unlike cycles, is not well defined and can vary to great extents. Cycles, as its name suggests, are mostly fixed and regular, and their phases are rather predictable. Our experience from developing and quantifying our economic cycle theories suggests that cycles are best applied within a shorter time frame, say a 3.5-year, or 42-month, 850-trading-day cycle. Once we try to apply our cyclical models into the distant future, the expanse of time starts to blur our vision. We may say that cycles are better for trading decisions, while long waves are more suitable for pursuing the meaning of price from a philosophical viewpoint. Cycles are prescriptive, while long waves are normative.

(2) The long waves are measured by absolute price levels, instead of the rate of change, as when we studied cycles. We can see the momentum of the price changes from the shifting slopes of the price levels. Indeed, we deliberately plot levels instead of rate of change, because the momentum in the change itself, or the second derivative of the price level, is the wave structure. It hints at the intensity of change. As momentum shifts, the world traverses peace and violence.

(3) Although the long waves vary in duration, they all share a similar sequence of development. They tended to crest at the peak of prosperity, for instance, the Gold Rush and the Roaring 20s. And their initial price movements were seldom furtive, even to amateurish eyes. Then, the long waves would develop price structure similar to a convex arc, a bow that is drawn, or an extended rounding bottom in technical analysis terms. Finally, they crested again in shattering world crises, such as the two World Wars and the Great Depression. But there is no definitive answer to how these long wave structures would go unraveled at the end.

(4) No existing theory could explain the formation of these long waves. Their existence is as stupefying as it is bewildering. We can try to explain their origin from the perspectives of monetarists, Malthusians or Marxists. Each perspective has its own merit, but none is encompassing of all waves. For instance, monetarists would believe that the third wave in **Figure 1** was initiated by the abolishment of the gold standard, and the fourth wave was precipitated by the zero-interest-rate policy that Greenspan adopted after the burst of the dot-com bubble in 2000 and Bernanke's subsequent QEs in 2008. Yet, price level continued to rise even after the most renowned inflation hawk of the Federal Reserve, Paul Volcker, "slayed the inflation dragon".

(5) The three long waves highlighted in our proprietary index in **Figure 1** roughly coincide with the three industrial revolutions that started in the mid- to late 19th century. The first two long waves are visually similar, coinciding with the first and the second industrial revolutions. The third long wave sprouting from the depth of the Great Depression in the 1930s is the most astounding. This is evidenced by the wave structure's nearly vertical ascent. Of course, during this wave, epic historic events occurred, such as the WWII, the Bretton Woods, the Yom Kippur, and Paul Volcker.

This wave has seen an intense period of world history. All of these shocks from monetary policy or wars to the global economic system can help explain the pronounced price move in this third long wave. The third industrial revolution characterized by computer, internet and semiconductor is still ongoing, but Paul Volcker had applied draconian monetary tightening to bend the unrelentingly surging third wave into the fourth wave that we are now confronted.

(6) In our quantitative theory of economic cycle, we have introduced a system of 850-trading-day/42-month moving average as a way to identify cycles and trading opportunities (please refer to our report titled "***A Definitive Guide to Forecasting China Market***" published 20 September 2019). We can also apply this metric to study the long waves. Generally, our proprietary price index moves consistently below the average for an extended period, and then above it to complete the wave. Currently, it doesn't appear that we are in a new "super cycle". But we are already swallowed by the fourth long wave characterized by technological breakthroughs and epic monetary policies since the 1980s. The longest wave in the past one thousand years of history lasted well over a century.

(7) While no general theory can explain the long waves in full, all long waves have been driven by rising demographics, improving living standards or both factors that have stimulated aggregate demand. For example, the third long wave we identified with our proprietary index was propelled by a post-war baby boom, and then followed by rising marriage and birth rates in the emerging countries. People tend to have family when the future is perceived as blissful, and the end of the Great War has made this vision possible for the hoi polloi. It is also the reason why recently the low birth rate and the rapidly-aging demographics in the Chinese population survey have been disquieting.

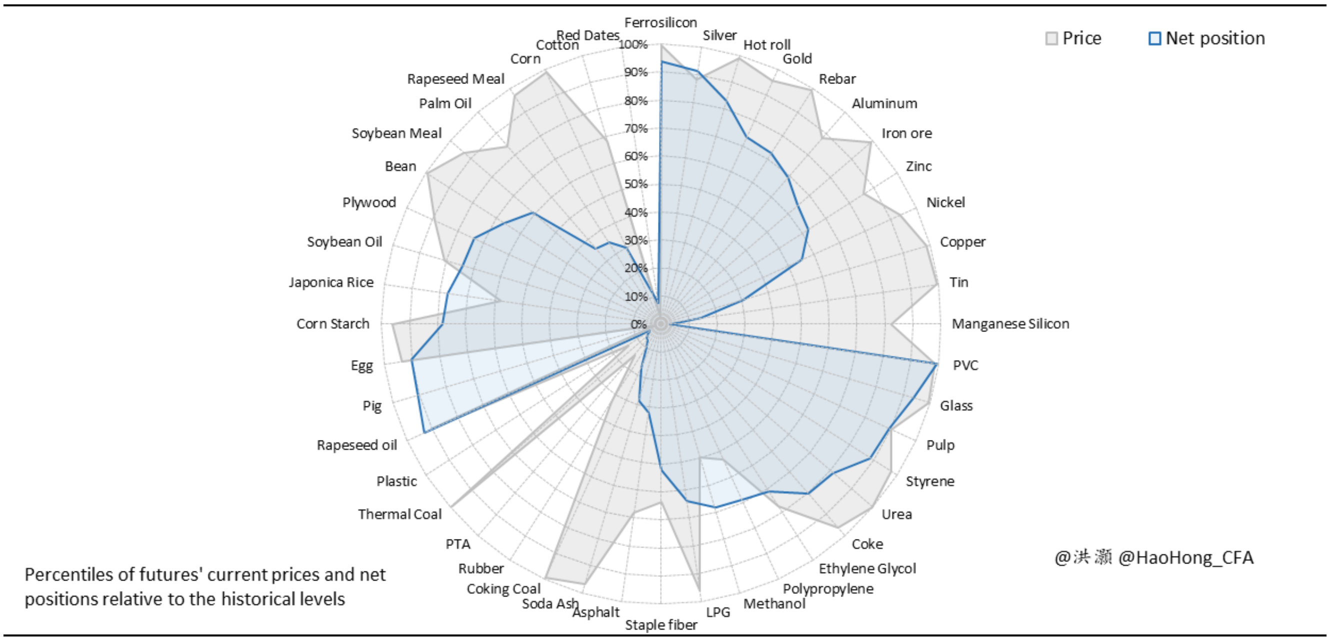
The developed world has long seen the inevitable decline in demographics coming, most notably Japan and Europe. As such, despite epic monetary and fiscal stimuli, the slope of our commodity price index has changed from the third wave. It is unclear where substantially higher aggregate demand would eventually come from, given the best of our current knowledge. If so, while we anticipate a period of torrid commodity price moves ahead, it is more a forecast stemming from the wave structure we identify in **Figure 1**. That said, if the impending period of inflation lasts longer than the consensus perception of "transitory", it will impress upon the masses that a new "super cycle" has dawned. In fact, we are already living in it.

Speculative Fervor?

Commodity prices have been surging with torrid pace recently, concurrent with historic volatility. Of course, China's jawboning to quench the "speculative fervor" has not helped. But is the commodity market really in a speculative bubble? And where is price heading, after an almost inexorable surge?

To gauge the intensity of commodity speculation, we compare the price strength and net speculative positioning in various commodities with their respective historical data. The results of this comparison study are shown in **Figure 2**. We can see that the price strength is indeed pervasive across the commodity spectrum, as denoted in grey, but the net speculative positioning denoted in blue is less so. We detect extreme speculative positioning only in ferrosilicon, silver, hot-roll steel, PVC, glass, pulp, styrene, coke, and some agricultural produce. That is, we have not detected prevalent speculative activities in the commodity market. The pricing strength in commodities is indeed supported by a global recovery and short-term supply bottleneck.

Figure 2: Percentile of commodity price strength and net positioning relative to history



Source: Wind, BOCOM Int'l

As such, while the authority's urge to suppress the speculative fervor to safeguard financial stability is commendable, such intervention can also create unintended consequences – suppliers may be unwilling to sell at an artificially low price and hold back on inventory. Such inventory stocking activities can induce a shortage of supply in the near term. Meanwhile, the expectation of a short-run, meaningful price correction cannot be fulfilled, and compel buyers to stock up, elevating short-term demand.

We are not saying that this will be the definite outcome. But it is a possibility one must contemplate. During the commodity price surge in 2016 and 2017 induced by the supply-side reform, commodity prices remained elevated all the way till late 2017 despite repeated policy curbs to limit production and industrial emission. Prices eventually fell, after the economic short cycle started to decline into 2018.

The Short Economic Cycle

In the past few years, we have developed a proprietary leading indicator for China's economic cycle based on quantitative methods (**Figures 3 and 7**). This indicator has served us well, helping to anticipate the turns of the Chinese economic cycle and negotiate the torrents. This indicator turns every 3-3.5 years, and the most recent definitive peak has been in mid-2017. Its peak in February 2020 may be a flute induced by the pandemic.

Our leading indicator correlates and leads a number of economic variables of price, volume and surveys. For instance, it correlates and leads the rebar spot price, IP, industrial goods, capacity utilization, and earnings growth and estimates, etc. As the economic cycle peaks and troughs, large arrays of economic variables move in tandem across spectrum, with regular and predictable rhythm and duration.

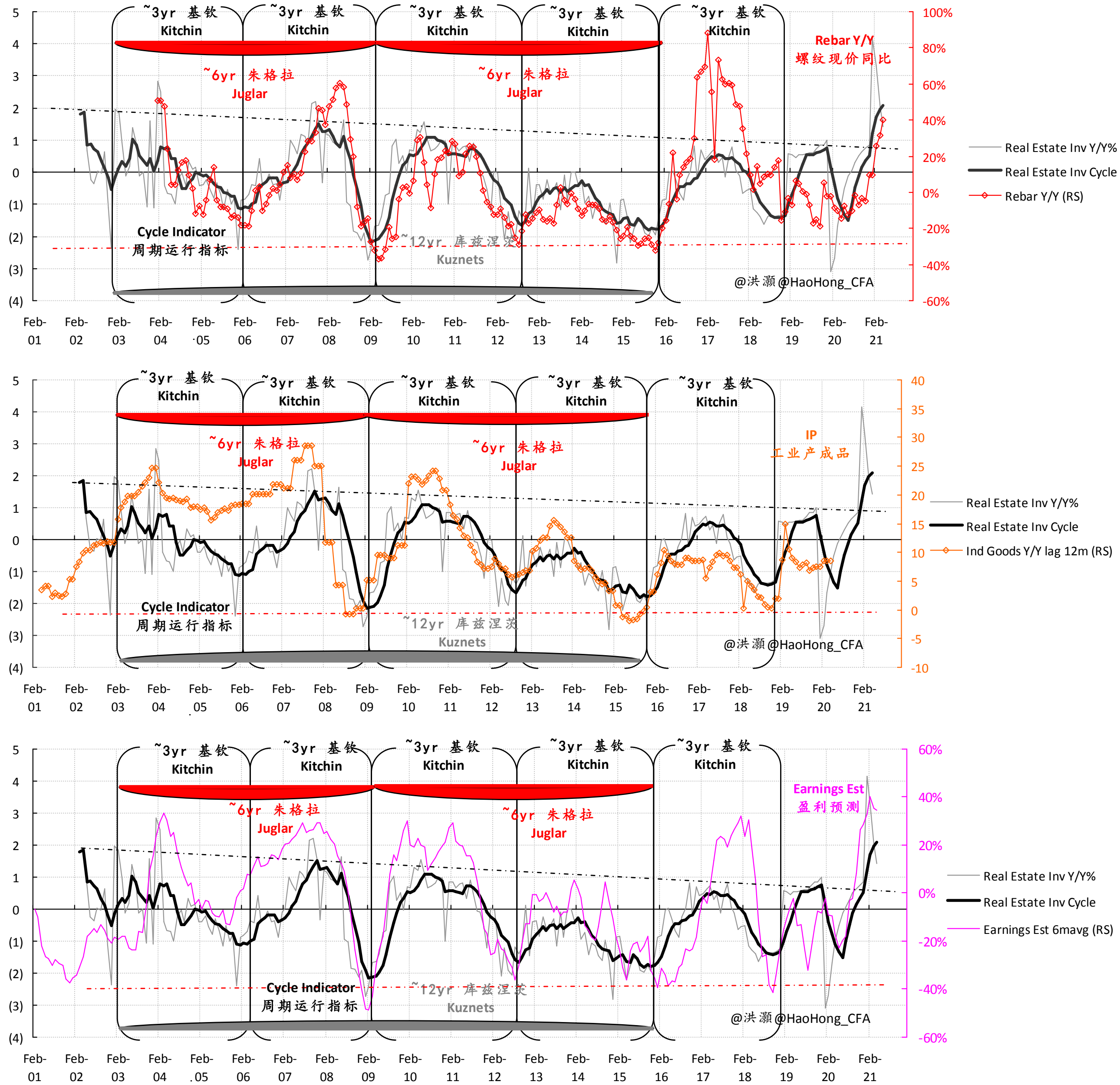
Right now, our leading indicator of China's short economic cycle appears to be peaking. Such a turn in the momentum of our leading indicator suggests a looming shift to a lower gear in the upward thrust of commodity prices. That is, the slope in the rising price curve is about to abate, the second derivate of price is negative.

That said, we would like to emphasize that our leading indicator is indeed leading in nature. It tends to herald the actual turn of the short economic cycle a few months earlier. For instance, in the economic cycle in mid-2017 the indicator foreshadowed the impending peak. But the cycle only turned after early 2018 induced by the trade dispute between China and the US. Indeed, 2018 has proven to be one of the most haggard years for the Chinese economy and its markets.

As such, the economic recovery will continue in the coming months, but its momentum is set to slow. From this perspective, the cyclical sectors and commodities are likely to see new highs in absolute levels in the coming months, with heightened volatility. But the easiest money has been made.

For detailed discussion of our quantitative economic cycle theory, please refer to our report titled "***A Definitive Guide to China's Economic Cycle***" and "***The Colliding Cycle of China and the US***" published on 24 March 2017 and 3 September 2018.

Figure 3: Our proprietary China economic cycle leading indicator is peaking



Source: Bloomberg, BOCOM Int'l

The Global Capex Cycle

The US is set to roll out ambitious capex spending under Biden's administration. While the plan is still being debated at the congress, and the eventual budget will likely be smaller than originally proposed, it will nevertheless be a shot in the arm for US infrastructure investment.

Indeed, the return on US capex spending has been languishing since it peaked in 2010. But it has been reviving since mid-2020, with the a few rounds of monetary and fiscal stimulus. This is even before Biden's "the American Jobs Plan".

As new spending plans are laid out, and return on capex continues to improve, it is possible that companies will continue to reinvest in themselves, instead of living with aged plants and machines and spending the capital for share buybacks.

The measure of return on US capex can be a proxy indicator for the global intention to invest in physical production facilities. Over the past few decades, this return measure has exhibited strong correlation with many important global asset prices. For instance, CRB commodity index, Cyclicals, the relative performance of Emerging Markets and small caps (**Figures 4 and 8**).

This global indicator also suggests a period of higher commodity prices ahead. That said, cyclical sectors' earnings estimates are starting to roll over (**Figures 6 and 9**). This is a short-term trading measure. The change in earnings estimates historically coincided with important market turning points, most notably in late 2007, early 2011 and early 2018 (**Figure 5**). Investors should take note. The easiest money has been made for now.

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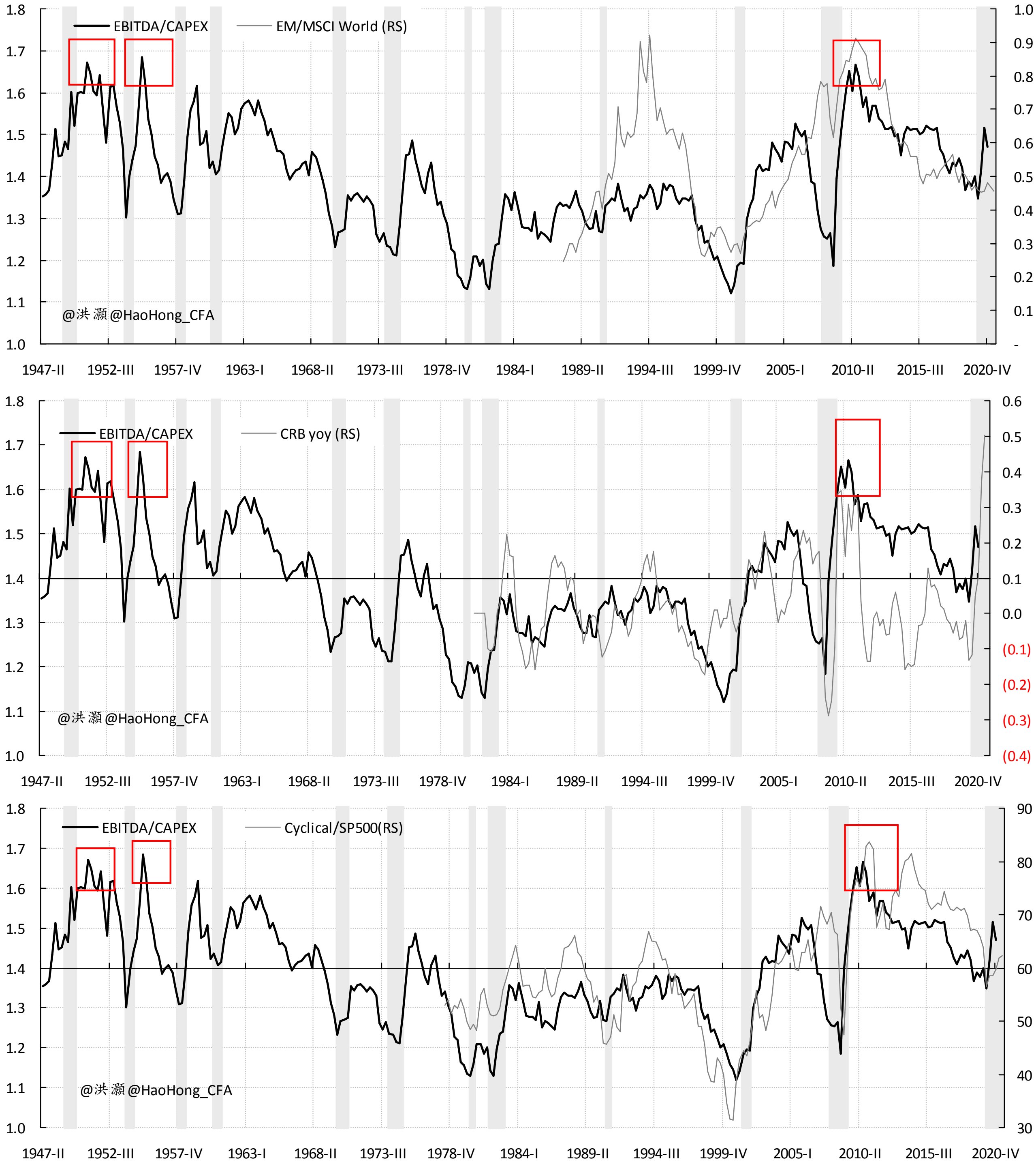
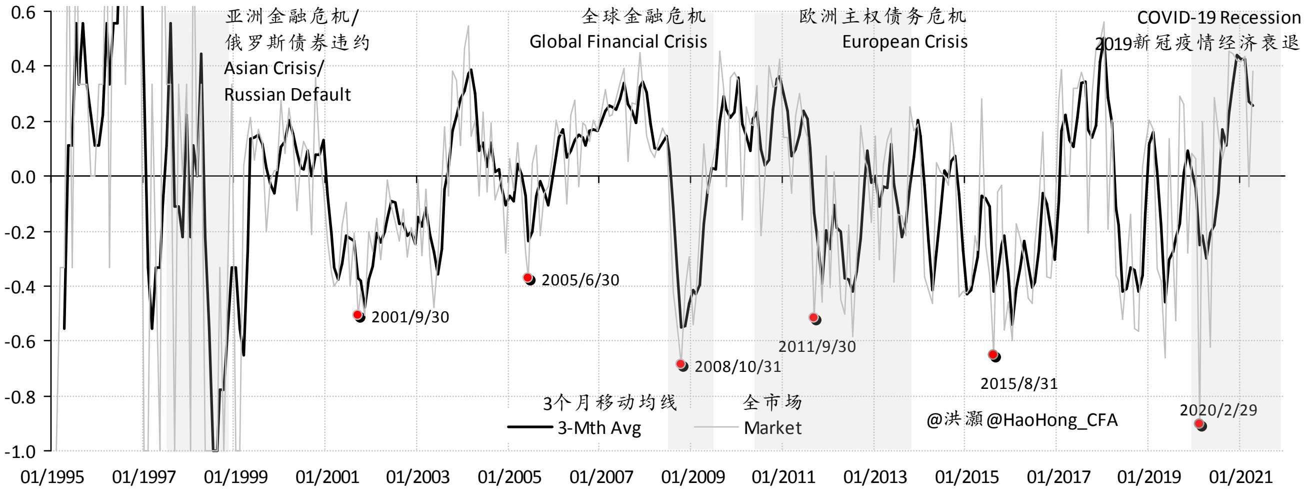
Figure 4: Return on US capex spending has been reviving since mid-2020



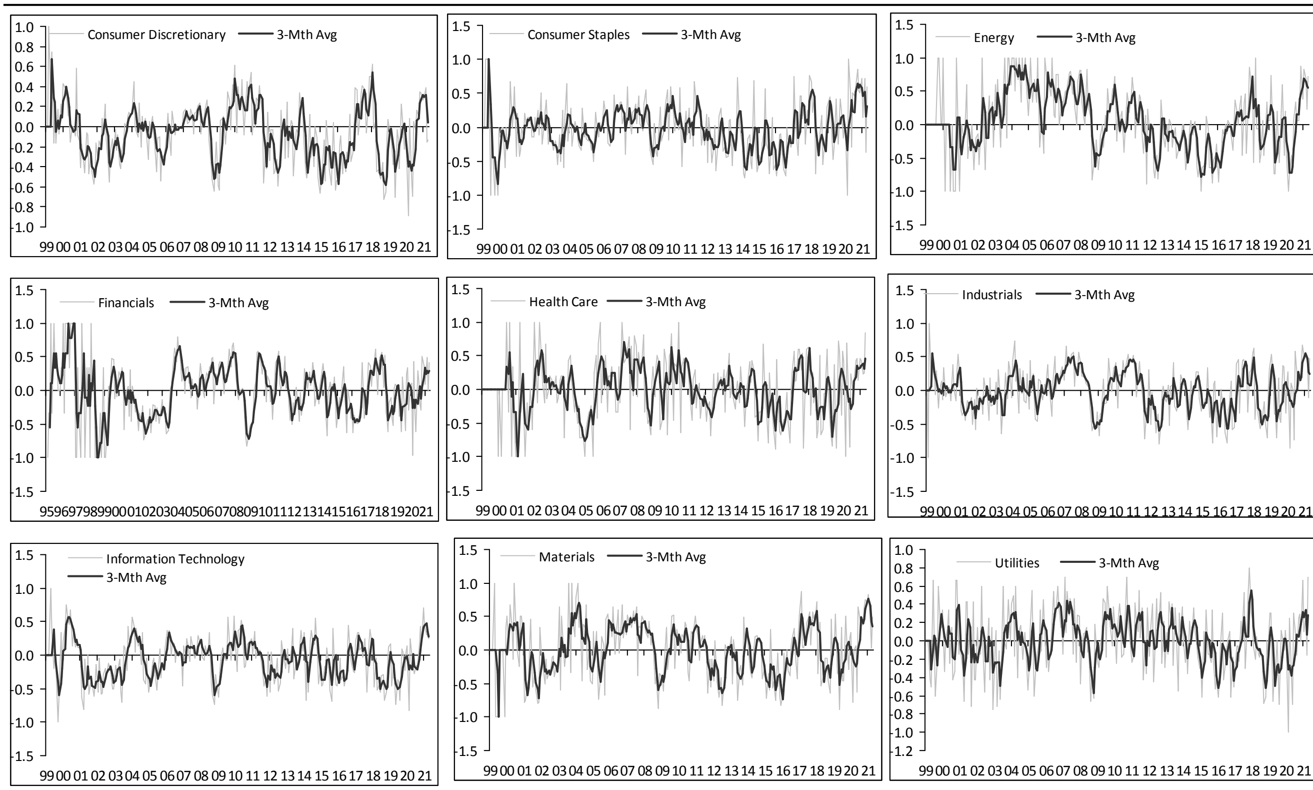
Source: BEA, Bloomberg, BOCOM Int'l

Figure 5: Change in earnings estimates historically coincided with important market turning points



Source: FactSet, BOCOM Int'l

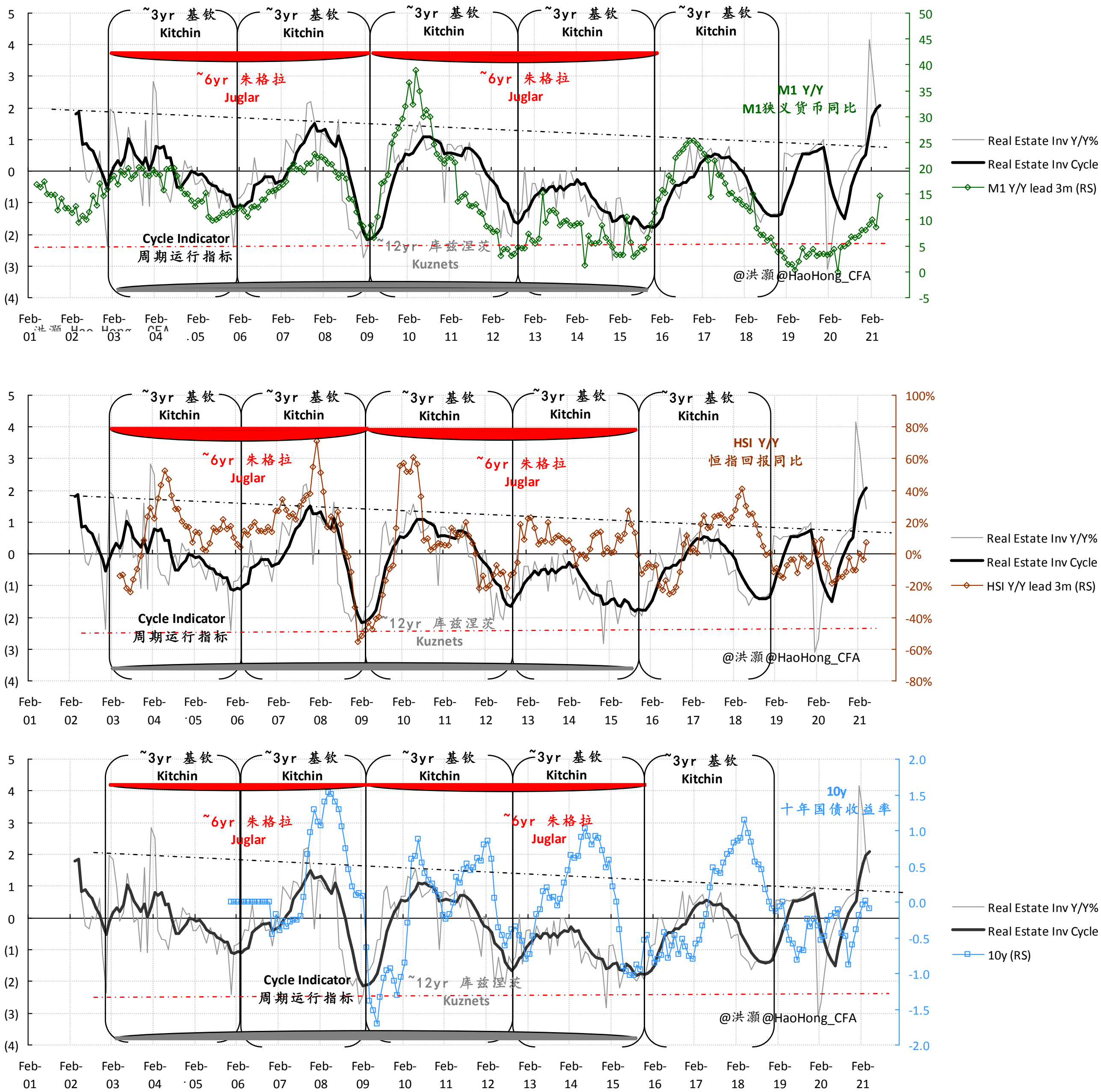
Figure 6: Cyclical sectors' earnings estimates are starting to roll over



Source: FactSet, BOCOM Int'l

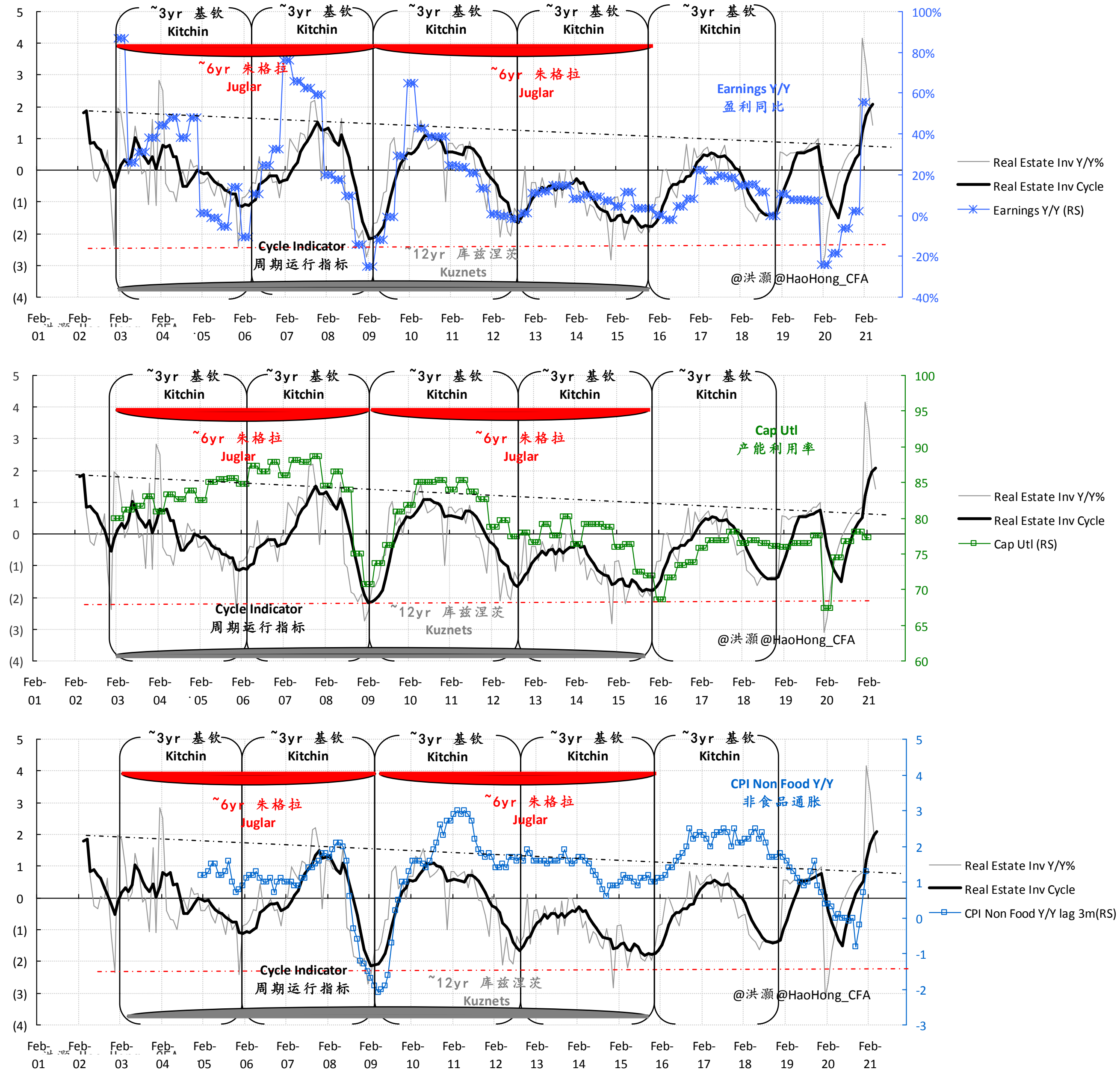
Appendix

Figure 7: Our proprietary China economic cycle leading indicator is peaking



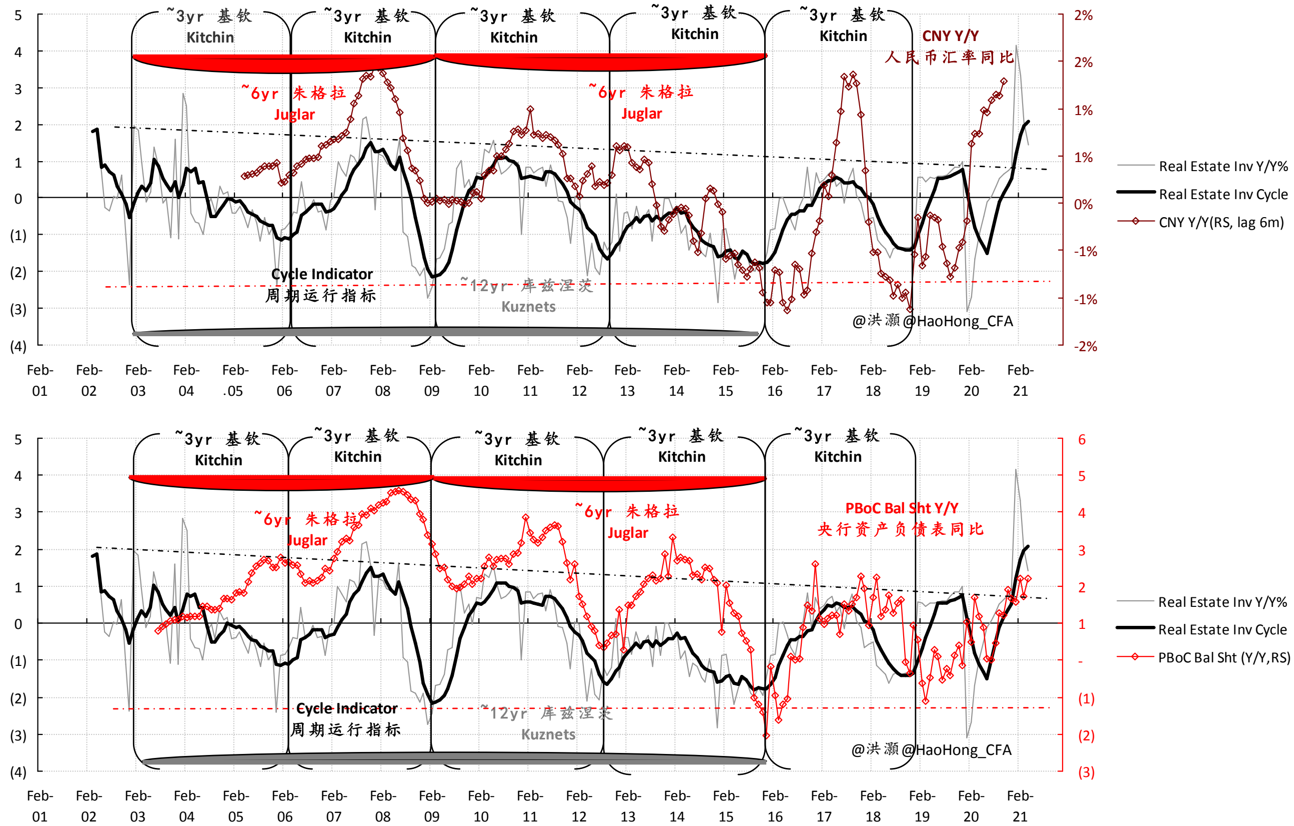
Source: Bloomberg, BOCOM Int'l

Figure 7: (Cont'd) Our proprietary China economic cycle leading indicator is peaking



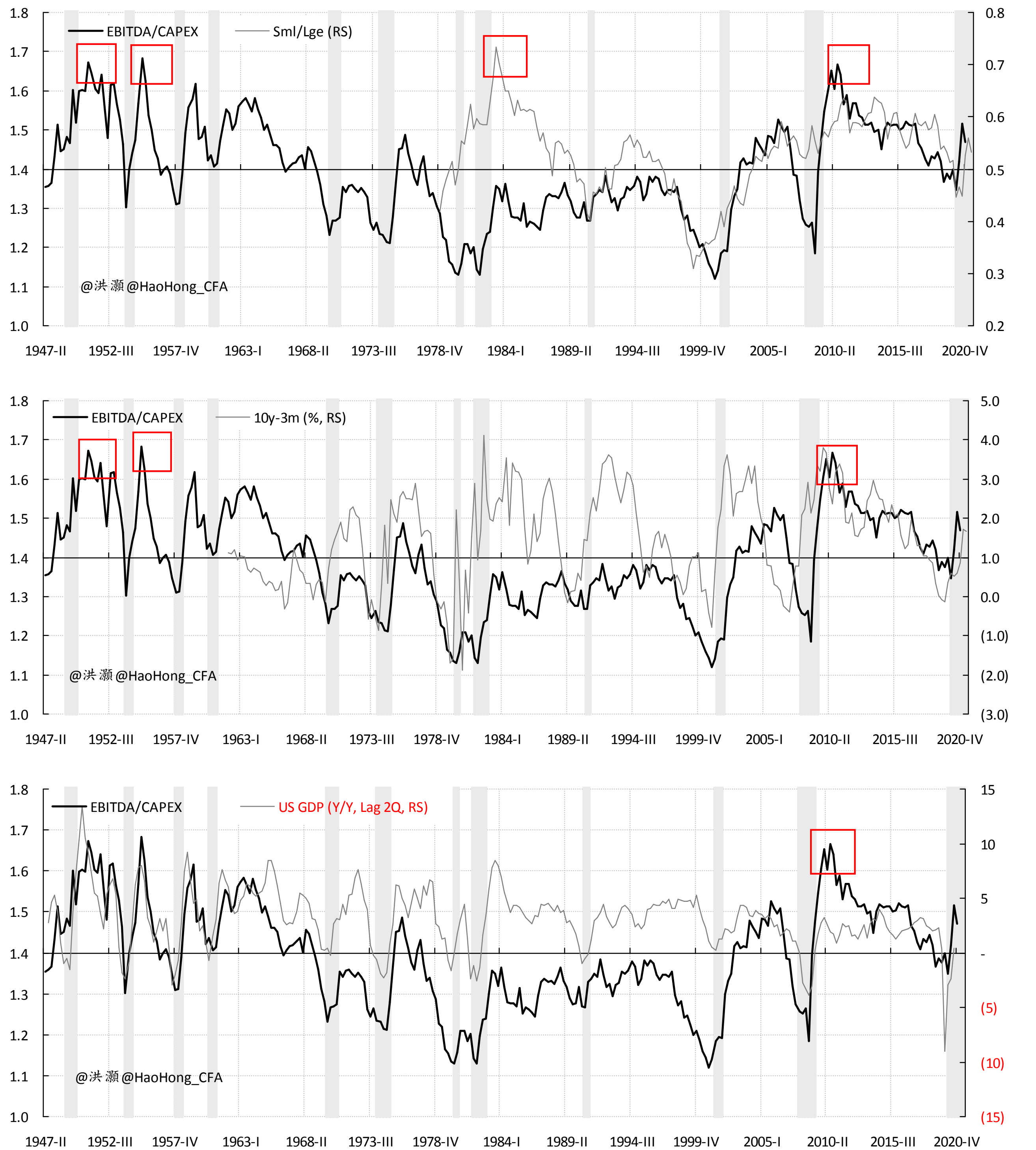
Source: BEA, Bloomberg, BOCOM Int'l

Figure 7: (Cont'd) Our proprietary China economic cycle leading indicator is peaking



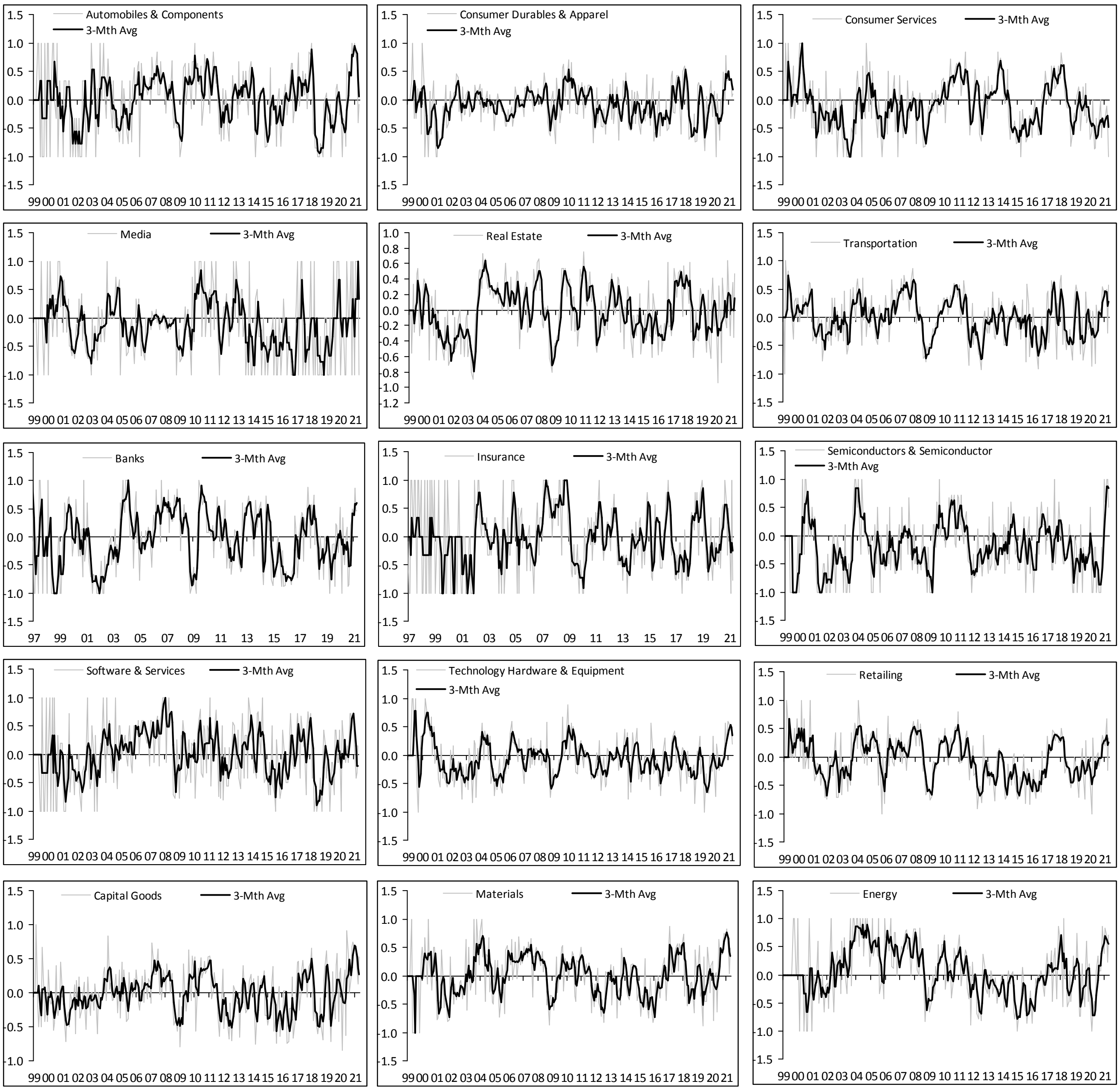
Source: BEA, Bloomberg, BOCOM Int'l

Figure 8: Return on US capex spending has been reviving since mid-2020



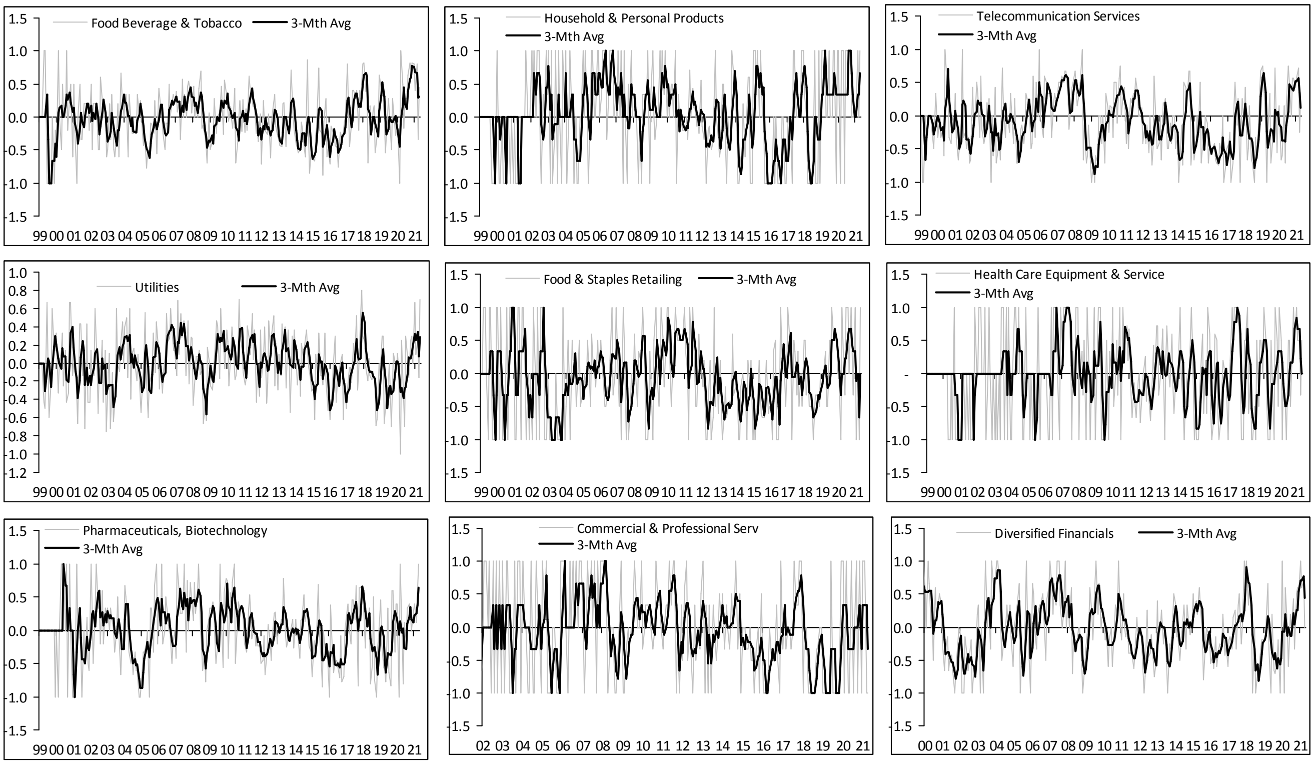
Source: BEA, Bloomberg, BOCOM Int'l

Figure 9: Industry groups' earnings estimates



Source: FactSet, BOCOM Int'l

Figure 9: (Cont'd) Industry groups' earnings estimates



Source: FactSet, BOCOM Int'l

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