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March 2019
Research & Strategy Insights

Unveiling China's Economic Cycle

Introducing our Economic Cycle Indicator and how we apply it to the current environment

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Key points

- The extreme stability of real GDP growth in recent years has led to a perceived death of business cycles in China
- However, such a perception is at odds with the large fluctuations in some sectoral activity data and heightened volatility in financial markets
- By constructing our own activity indicator, we show that China's business cycle is alive and kicking, and has evolved in a remarkably stable fashion in the last 15 years
- Importantly, the indicator has demonstrated an excellent ability to capture cycles in China's domestic and external demand, and movements in its capital markets. The timeliness and high frequency of data publication also makes the indicator a useful tool for forecasting
- The indicator shows that China is approaching the end of its current business cycle. While further slowdown is still likely, the economy should find a bottom in the coming months
- This is in line with our view that China's economic momentum will remain weak in the first half of 2019 followed by a stabilization in the latter part of the year, leaving 12-month growth at 6.1%

Where is the cycle in the Chinese economy?

The recent deterioration in high-frequency data has reignited concern about the health of the Chinese economy. However, wide divergences between some official data, such as GDP, and well-followed indicators, such as Purchasing Managers Indices (PMIs), have led to confusion about the severity of the slowdown. Given the rising economic significance of China, gaining an accurate understanding of where we are in the cycle and how it may evolve going forward is important for not only local investors, but also China's trading partners and global investors, who are increasingly exposed to the Chinese market[1].

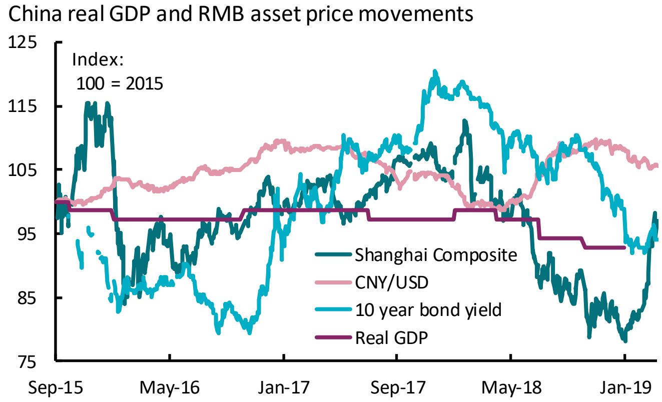
Unfortunately, debates about the Chinese economy are often impeded by the perceived low-quality of China's statistics. Compared to most developed countries, where GDP is used as a reliable indicator of economic activity, China's equivalent is often regarded as heavily manipulated by the government to fulfil political objectives [2]. The facts that China has never missed its growth targets and the political evaluation system remains contingent on economic performance are good reasons to be sceptical about the data quality.

[1] Yao, A and Shen, S., "China: Exerting its influence over Asia" AXA IM Investment Research, 16 February 2017

[2] Chen, W. et al., "A forensic examination of China's national account" Brookings Papers, 7 March 2019, shows that Chinese GDP may be overestimated by 1.7% per year between 2008 and 2016, partly because of local governments were incentivised to over-achieve their growth targets.

A more fundamental issue about China's GDP data is its extreme lack of volatility in recent years. Since 2015, real GDP growth has oscillated in an exceptionally tight range of 6.4% to 7%, significantly below the variations seen in prior periods and those experienced by other major economies. What is even more puzzling is that this growth stability is in sharp contrast to the profound changes in many parts of the economy and large price swings in asset markets (Exhibit 1). Since the latter can be readily explained by Beijing's aggressive implementation of supply-side reforms, the evidence appears to be stacked against the credibility of the GDP data.

Exhibit 1: Stability in GDP growth at odds with large financial market variations



Source: Bloomberg and AXA IM Macro Research – As of Feb 2019

In the quest for an alternative indicator

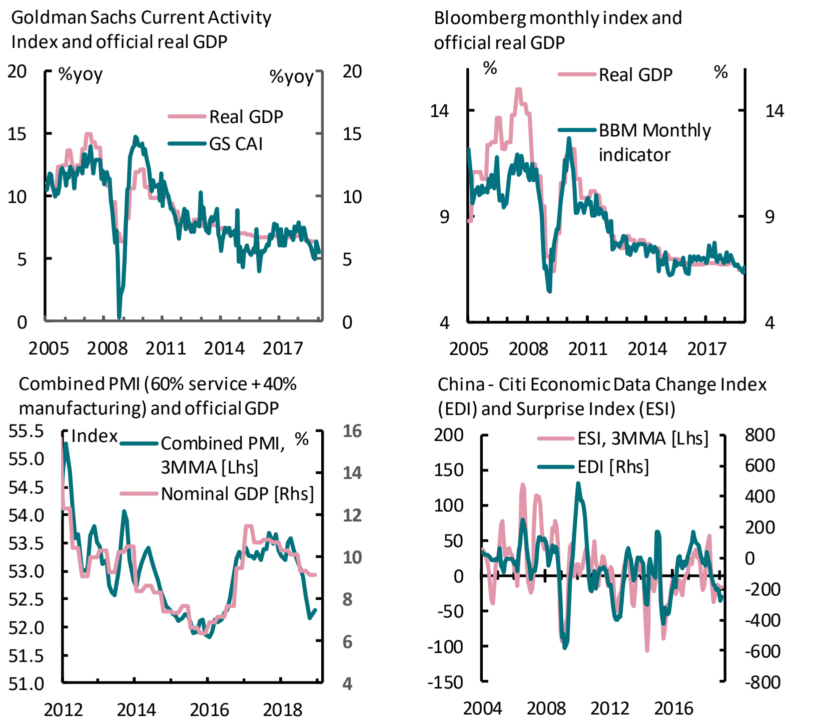
Regardless of concerns over data manipulation, the notable difference between the GDP figures and other real/financial variables begs an important question: if GDP cannot capture the cycles which exist in many parts of the economy and financial markets, then what is its value as an indicator of China's macro fundamentals?

Rather than answering a rhetorical question, we sought out an alternative indicator to measure China's economic activities. Exhibit 2 shows five of the potential candidates, which are selected based on a few simple rules:

1. The indicators are publicly available and have a decent history for back-testing
2. They are released in a timely manner and higher frequency than GDP
3. They are constructed by reputable, non-official agencies, and the methodologies behind their constructions are simple and transparent to data users

Exhibit 2 shows that all five indicators have performed well against their respective benchmarks. However, it is not immediately clear that there is a common trend that represents a single and consistent measure of China's business cycle. Part of this is because the indicators are *not* all measuring the same thing – some are designed to track the nominal economy, some measure real growth, while others (like the PMIs) capture activities of specific sectors. In addition, the data is presented in different forms, with some expressed in GDP units, and others are diffusion or momentum indices.

Exhibit 2: Alternative indicators for gauging China's economic activity

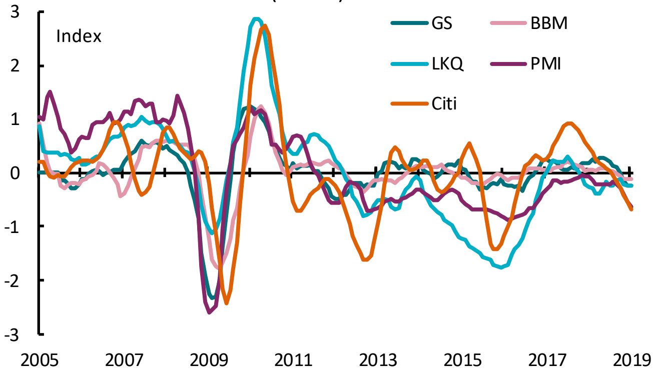


Source: Bloomberg, CEIC and AXA IM Macro Research – As of Feb 2019

To make the data comparable, we standardized the different indicators and smooth them by applying a (small) Hodrick-Prescott (HP) filter. A common pattern, as presented in Exhibit 3, starts to emerge.

Exhibit 3: A common trend among the indicators

Z-scores for GDP indicators (6mma)



Source: Bloomberg, CEIC and AXA IM Macro Research – As of Feb 2019

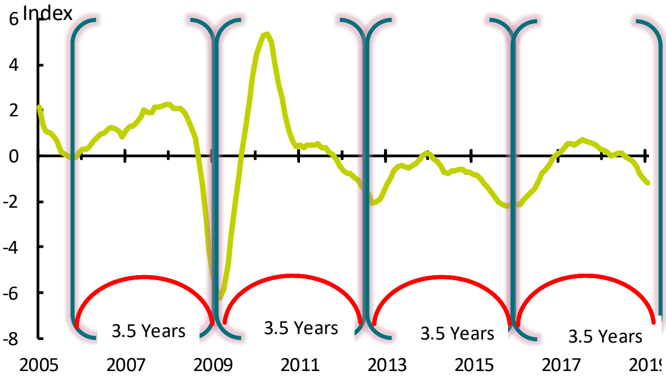
Introducing the Economic Cycle Indicator

The next step is to find the "common denominator" among the five series. This is done by extracting the first principle component of the series, and the result – we call it the China Economic Cycle Indicator or ECI – is presented in Exhibit 4. A few interesting facts are worth highlighting:

- **The Chinese economy does evolve in cycles over time.** This contrasts with the stability in real GDP growth, but is akin to that observed in other major economies.
- **The duration of the cycle is very stable**. In the past 14 years, the economy has completed three full cycles, with the fourth one also approaching to an end. Each cycle has lasted for about 3.5 years – a duration that has been remarkably stable.
- **The amplitude of the cycle varies over time**, with the most recent two cycles having smaller peaks than prior ones. This is consistent with an economy undergoing structural growth deceleration.
- **The current cycle, which started in 2016, appears to be approaching maturity.** The ECI suggests that the cycle peaked in mid-2017 and turned decidedly negative in the second half of last year. Applying the 3.5-year duration, the current cycle should approach completion at mid-2019, in line with our call of the economy bottoming in late second quarter, followed by a mild recovery in the second half.

Exhibit 4: China's business cycle expressed by the ECI

First principle component of China activity indicators



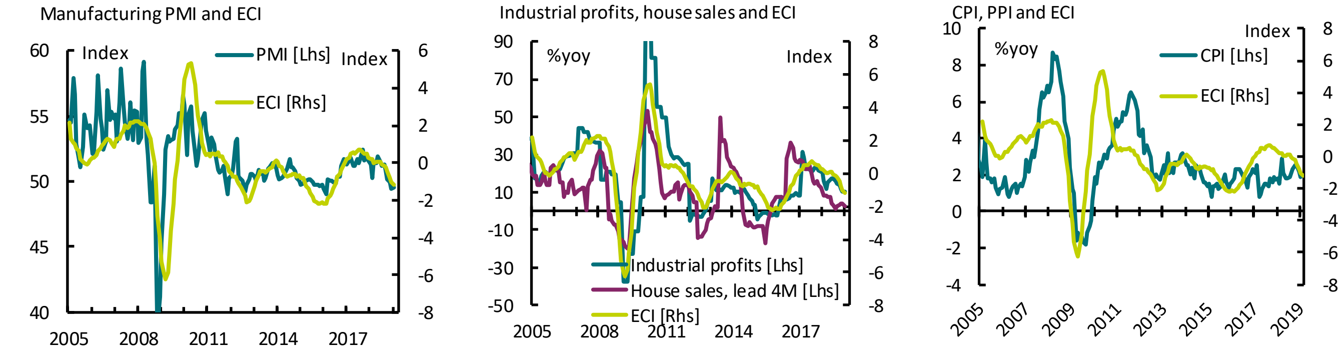
Source: AXA IM Macro Research – As of Feb 2019

How well does the ECI represent the "cycle"?

While the ECI seems to concur with our latest reading of the economy, such a short-dated comparison against one's perception is not sufficient to systematically test the indicator. For a proper evaluation, we consider the ECI against variables that represent China's domestic and external demand, and movements in its capital markets. Exhibits 5-7 summarize the key findings.

Exhibit 5 shows how the ECI performs against variables of China's domestic conditions. Against the PMI, the ECI seems to capture well the cycles of the index, with the correlation even strengthening in recent years. The ECI also tracks well the underlying growth of industrial profits and house sales, which are key "beta" indicators of the Chinese economy. Finally, the ECI leads Consumer Price Index (CPI) inflation by about a quarter, consistent with the standard behaviour of price movements lagging economic activities. Overall, the ECI has performed well at capturing underlying trends in China's domestic demand.

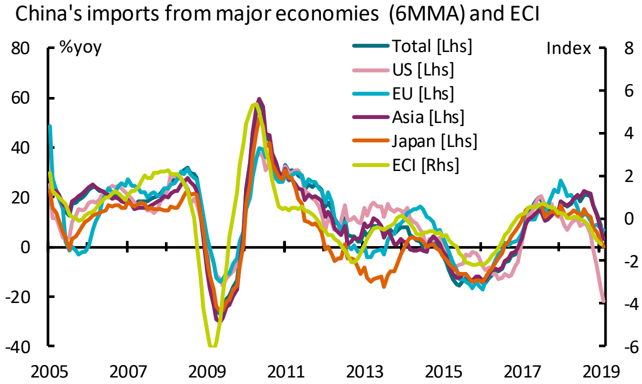
Exhibit 5: The ECI tracks well the cycles in China's domestic demand



Source: Bloomberg, CEIC and AXA IM Macro Research – As of Feb 2019

Variations in China's business cycle should also manifest in its imports from the rest of the world. Import (and export) data in China are reported by Customs and are difficult to manipulate as they can be cross-checked against those of its trading partners. Exhibit 6 shows the ECI explains the underlying cycles of import growth well. The recent plunge in the latter seems to be forewarned by the visible weakening in the ECI, although the Sino-US trade war has clearly exacerbated the decline in US shipments. What is also visible is a stable two to three-month lead by the ECI over import growth, suggesting the indicator can be used for forecasting.

Exhibit 6: the ECI co-moves with China's import growth



Source: Bloomberg and AXA IM Macro Research – As of Feb 2019

Finally, we examine how the ECI can help explain cycles in China's capital markets. Equity investors in China have long complained about the lack of wealth creation in A-shares despite the stellar GDP performance[3]. However, if GDP isn't a good indicator of economic fundamentals to start with, the lack of correlation could just be a result of data misrepresentation. Conversely, if the ECI performs better at explaining financial market variations, its use could be dramatically expanded.

Exhibit 7 puts that hypothesis to the test. The first chart on the left shows the ECI against earnings-per-share (EPS) growth of A-share and MSCI-China listed companies. We choose EPS growth, instead of total returns of the indices, because the latter could be "contaminated" by valuation changes, which may, or may not, be driven by economic fundamentals. As shown by the Exhibit, the ECI and EPS have indeed co-moved strongly, with the former leading the latter by about three months.

Besides equities, we also found stable correlations between the ECI and fluctuations in the RMB effective exchange rates and prices of commodities that are sensitive to Chinese demand. These common trends – between the ECI and asset price movements – are important for fulfilling two purposes: one, they confirm the effectiveness of the ECI in projecting China's business cycles; and two, they underscore the importance of economic fundamentals in driving China's capital markets. The fact that the ECI can even be used to forecast some variables, such as EPS growth, is icing on the cake!

Getting a step ahead of the cycle

As an indicator of economic cycles, the ECI can be updated in a timely and frequent manner thanks to the high frequency of its inputs. What's even better is that we can get a step ahead of the curve by monitoring a set of variables that lead the ECI. Exhibit 8 highlights some of these indicators, including the PMI new orders, house sales and aggregate credit growth. We find that total social financing growth provides the longest lead to movements in the ECI, by four to six months, reflecting the time of monetary policy transmission in China. Even though credit growth has recently picked up, thanks to increased policy supports, the real economic impact will take time to materialise. This reinforces our view that there will be a couple more months of economic darkness before the dawn.

Concluding remarks: what ECI can or cannot do

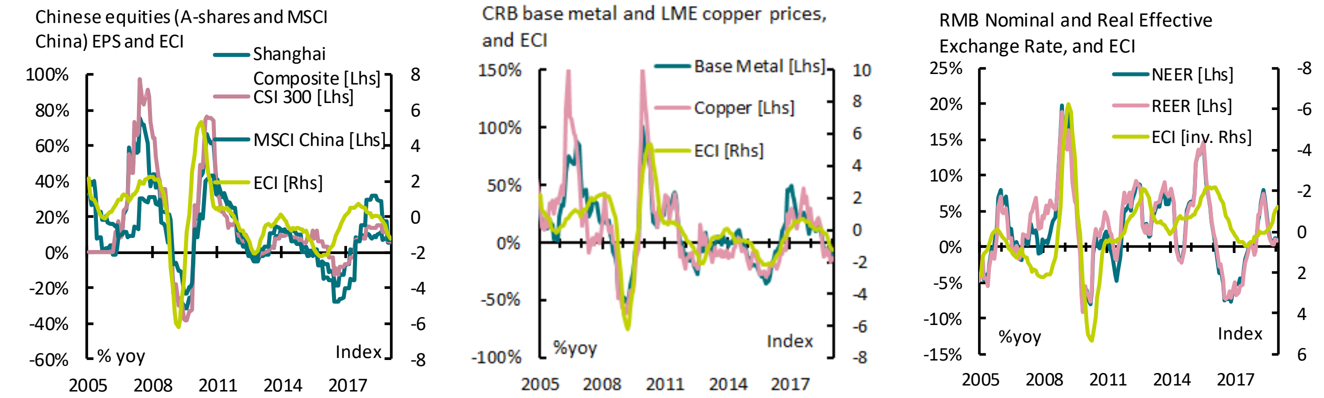
Given the well-known shortcomings of official GDP data, this paper sets out to seek an alternative activity indicator for China. Our newly constructed Economic Cycle Indicator has exceeded our expectations in providing a simple, and yet comprehensive, measure of business cycles that corroborate well with variations in China's domestic and foreign demand, and fluctuations in its capital markets. The ECI has also revealed some interesting characteristics of past cycles, such as the constant cycle duration, which can be used for future forecasting.

Contrast to its advantages, it is equally as important to point out a few deficiencies of the ECI, including:

1. It cannot determine the speed at which the economy grows, as the ECI is constructed as a standardised indicator
2. It cannot explain why the duration of past cycles was constant, and hence, cannot guarantee it will be repeated in the future
3. It does not reveal anything about China's changing economic model and whether that will have an impact on business cycles going forward
4. It is, by design, not the best indicator for predicting turning points of cycles, as its output is smoothed to capture underlying economic trends

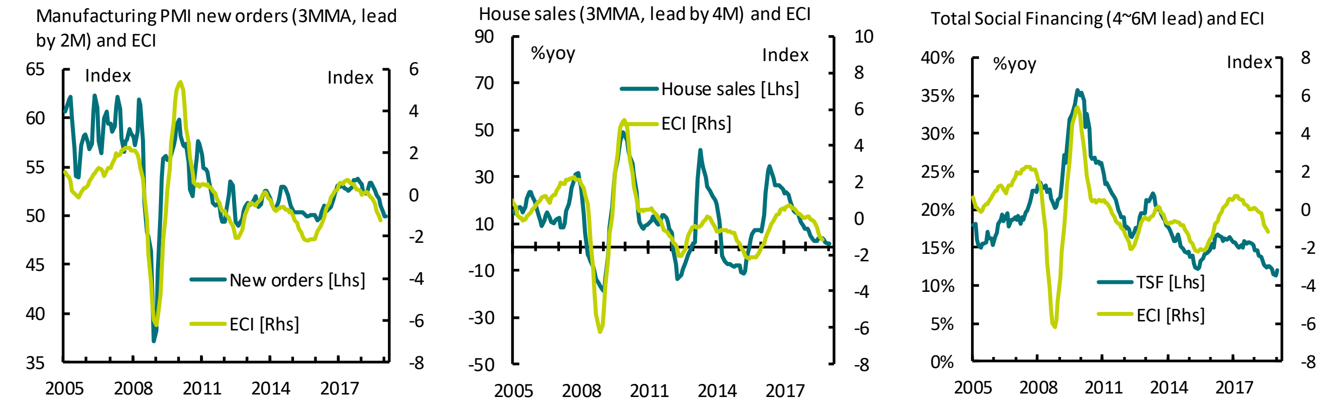
[3] Nominal GDP in China expanded by 32 times since 1992, while the Shanghai Composite rose by *only* 8 times. This compares to the US with 3 times GDP growth but 6 times expansion in the S&P 500 index over the same period.

Exhibit 7: The ECI can explain cycles in financial markets



Source: Bloomberg and AXA IM Macro Research – As of Feb 2019

Exhibit 8: Some indicators can get us ahead of the cycle



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