THE MACRO BULLETIN
Macroeconomic research from the FEDERAL RESERVE BANK *of* KANSAS CITY
FEBRUARY 29, 2016

Gauging the Strength of Chinese GDP Growth

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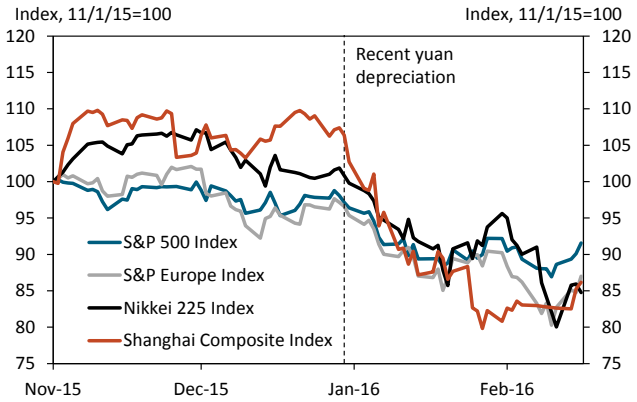
We construct an alternative measure of real GDP growth in China. Our measure aligns well with official GDP figures, indicating official GDP figures remain a useful and valid measure of Chinese economic growth. While growth in China's nonfinancial sector has slowed, it remains stable. However, strong growth contributions from the financial sector have begun to unwind, posing downside risks to near-term GDP growth.

Global financial markets have been relatively volatile since the beginning of the year, due in part to the depreciation of the yuan and concerns about the strength of the Chinese economy (Chart 1). Gauging the strength of the Chinese economy is difficult, as many market participants are skeptical about the official Chinese GDP numbers. To better assess China's GDP growth, we construct an index using a series of sectoral data from different sources and at different frequencies. Much of the data are not directly reflected in China's official GDP statistics but can provide an indirect check of the headline GDP estimate. In addition, our index can help highlight possible areas of weakness and risks for the Chinese economy going forward.

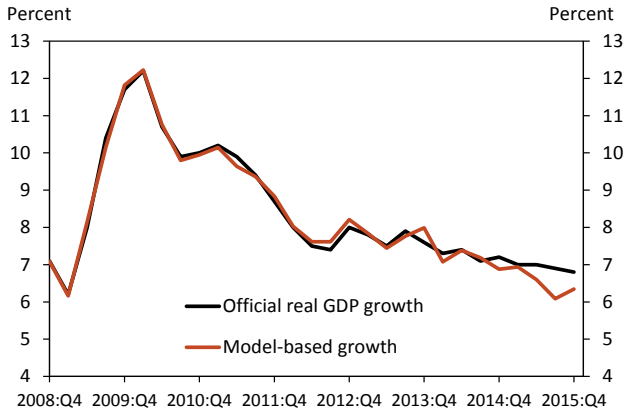
Chart 1: Yuan depreciation and global equity selloff



Sources: Financial Times, New York Times, Shanghai Stock Exchange, Standard & Poor's, and Haver Analytics.

We construct the index from a regression model using variables that capture the strength of key sectors of the Chinese economy. In particular, the model uses indicators on manufacturing activity, consumer spending, the real estate sector, and the services sector. To capture manufacturing activity, we include electricity production, freight tonnage, steel production, fixed asset investment, industrial production, as well as two manufacturing PMI indexes from both Caixin and the China National Bureau of Statistics. To approximate consumer spending, we use data on retail and auto sales. To capture the strength of the real estate sector, we use two indexes of real estate floor space (started and sold). Finally, since various anecdotes suggest Chinese growth is more reliant on the service sector now than in the past, we include two services measures: the PMI nonmanufacturing index from China NBS and the Caixin PMI services index.

Chart 2: Chinese GDP growth



Sources: Caixin, China National Bureau of Statistics, Markit Economics, Haver Analytics, and author's calculations.

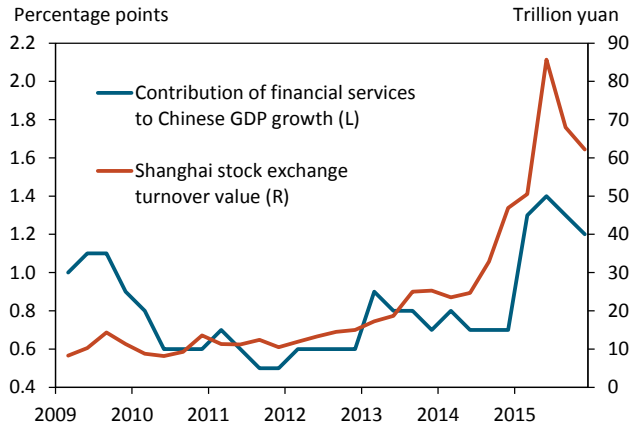
We estimate the model using quarterly data from 2008:Q4 to 2014:Q4, the longest period available for all data series.[1] All variables are in growth rates except PMI

measures. Chart 2 shows that the model captures the variations in Chinese GDP growth fairly well over this period. The R-squared value of this estimation is 0.99, which means it can explain about 99 percent of Chinese GDP growth during this period.

In 2015, the model predicts a growth rate slightly below the official GDP estimates, although both measures suggest growth remained stable, as shown by the orange line in Chart 2. The good fit of the model over the last few years, including during the recession, suggests the model captures the key developments in the Chinese economy. Thus, it is reasonable to believe Chinese growth has remained stable despite some slowing in the middle of 2015.

The model's deviation from the official estimate in 2015 may be related to the Chinese stock market rally. In the fourth quarter of 2014, the Chinese stock market started to rise rapidly, partially driven by monetary easing and government support to the market. The market peaked in June 2015 followed by several large declines. Over the same period, the contribution of Chinese financial services to GDP growth showed a similar pattern (Chart 3).

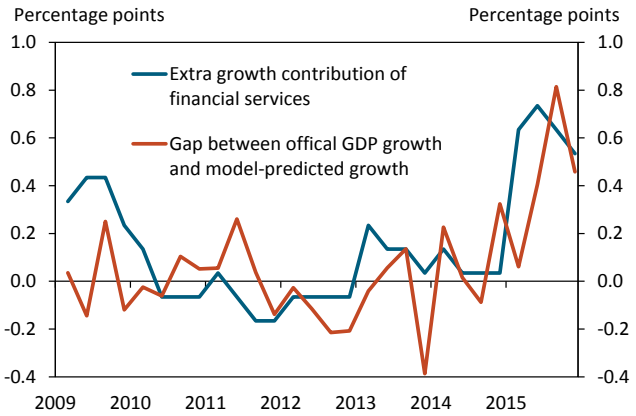
Chart 3: GDP contribution of financial services



Sources: China National Bureau of Statistics, Shanghai Stock Exchange, and Haver Analytics.

Though financial services are much broader than the revenues and fees the stock market generates, the unusually large increase in the stock market turnover value (specifically, the total value of shares traded) likely led to a significant increase in the financial sector's contribution to GDP growth. To confirm this, Chart 4 plots the gap between the model-predicted GDP growth and official GDP growth and compares it with the extra contribution to growth from China's financial services, defined as the deviation from the sector's average contribution in 2000–15. The gap between the two measures appears to largely reflect the extra contribution of financial services. In other words, the services components used to predict GDP growth in the model do not fully capture the services coming from the financial sector. Thus, the recent development in the growth of the Chinese financial sector may explain why China's official estimate of GDP growth is higher than what our model predicts.

Chart 4: Explaining the "gap"



Sources: Caixin, China National Bureau of Statistics, Markit Economics, Haver Analytics, and author's calculations.

This finding highlights potential risk to the Chinese growth outlook in the near term. The unwinding of the unsustainably large contribution from financial services could create a significant drag on Chinese GDP growth

in the near term. For example, if the contribution to GDP growth from finance returns to its average level in 2000–15, the contribution of the finance sector to GDP growth will be 0.6 percentage points smaller in 2016 than in 2015.

Overall, our analysis returns three key findings. First, the official Chinese GDP numbers seem to capture the overall strength of the economy reasonably well. Second, growth in China's nonfinancial sector has slowed in recent quarters. Third, China's relatively stable growth in 2015 is partially due to the large contribution from its financial sector, likely generated by the 2015 stock market rally. Given the current cooling equity market, Chinese growth may face additional downward pressure from the financial sector's smaller expected contribution.

[1] We convert monthly measures to quarterly averages. Data for 2015 are not included in the sample estimation, as it significantly worsens the model fit of growth from 2008 to 2014.

Jun Nie is a senior economist at the Federal Reserve Bank of Kansas City. The views expressed are those of the author and do not necessarily reflect the positions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.