Analysis on Deviation between GDP Growth and Electricity Consumption Rise in China in 2015

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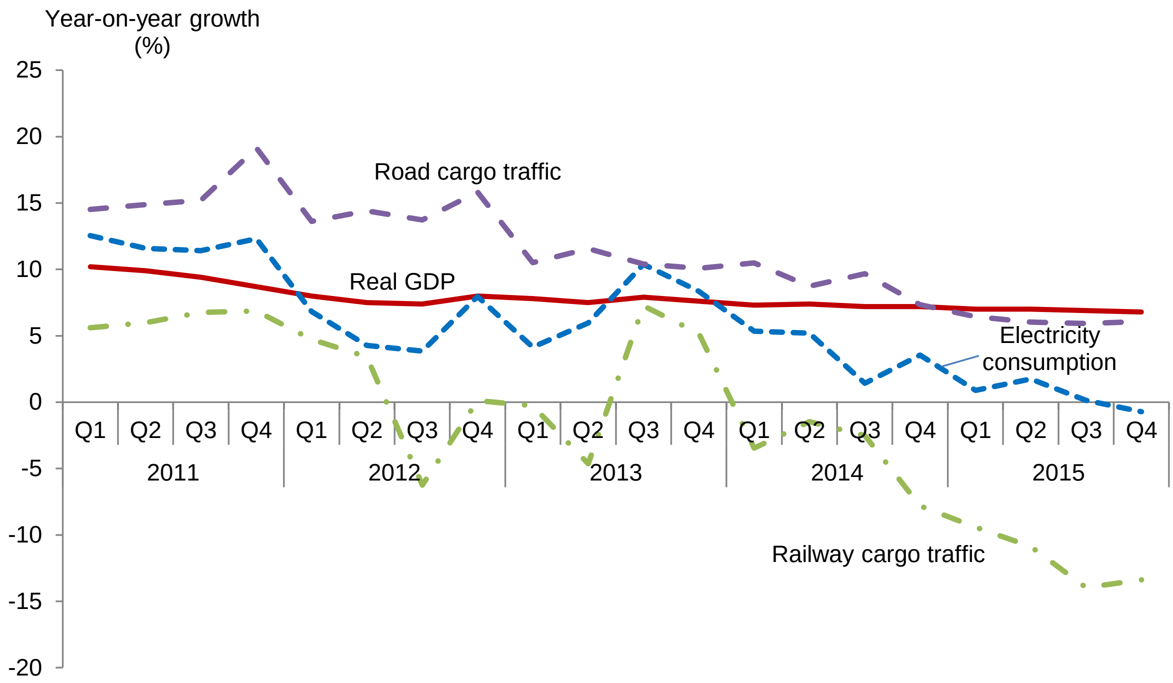
The Chinese government's official statistics have given China's real gross domestic product growth in 2015 as 6.9%. However, primary energy and electricity consumption growth rates were only 0.9% and 0.5%, respectively. Coal consumption even posted a decrease of 3.7%. Premier Li Keqiang once said he paid attention to electricity consumption and cargo traffic in judging economic growth. Given that the electricity consumption growth slipped far below the GDP growth, some observers believe that GDP growth could have been lower than officially announced (see Figure 1).

This paper analyzes details of Chinese GDP growth in 2015, including its relationship with electricity consumption, based on GDP (added value) by industry in official Chinese statistics.

Figure 1 China's GDP growth, and electricity consumption and cargo traffic changes



(Sources) Prepared from data published by National Statistics Bureau of China and China Electricity Council

■ Chinese GDP by industry

First, an industry-by-industry GDP breakdown indicates that the secondary industry accounted for the largest share of GDP at 46% until 2011 before the tertiary industry captured the largest share and posted a higher growth rate than overall GDP from 2012. In 2015, the secondary industry's growth slipped below the overall GDP growth to 6.0%, while the tertiary industry boosted its growth rate by 0.5 percentage points to 8.3% and accounted for more than 50% of overall GDP (see Table 1).

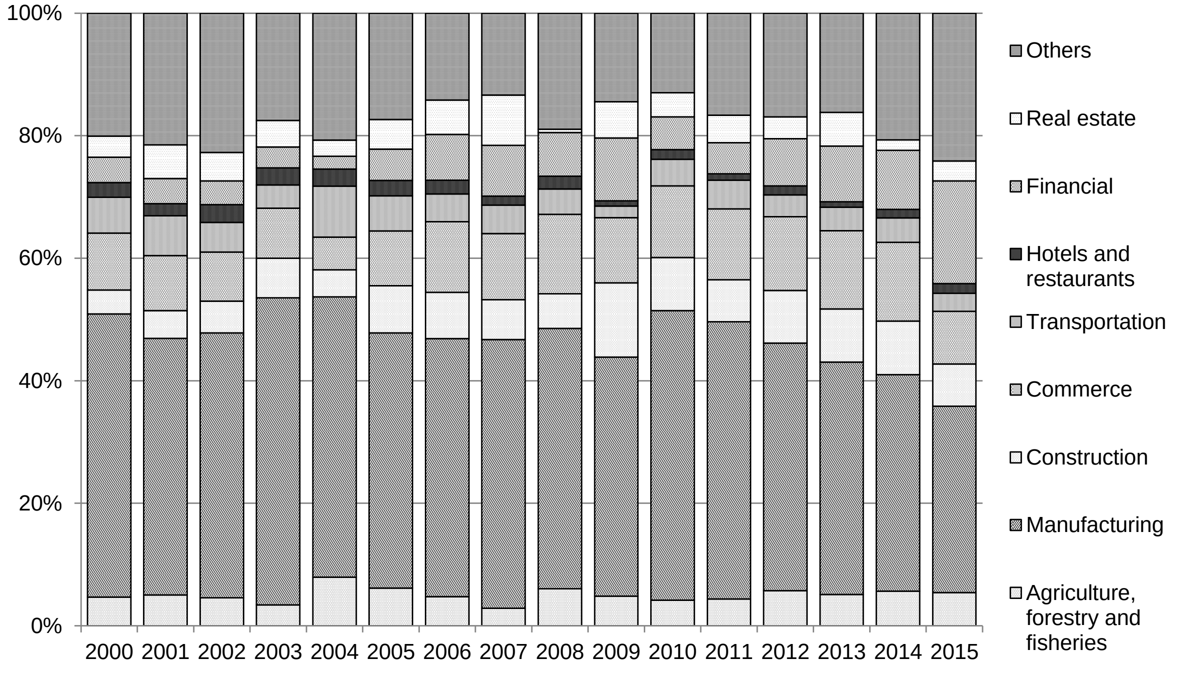
Table 1 Chinese GDP by industry

	2011	2012	2013	2014	2015
Nominal value (trillion yuan)					
Nominal GDP	48.4	53.4	58.8	63.6	67.7
Primary industry	4.6	5.1	5.5	5.8	6.1
Share	(10%)	(10%)	(9%)	(9%)	(9%)
Secondary industry	22.3	24.0	25.7	27.2	27.4
Share	(46%)	(45%)	(44%)	(43%)	(41%)
Tertiary industry	21.5	24.3	27.6	30.6	34.2
Share	(44%)	(46%)	(47%)	(48%)	(50%)
Year-on-year real growth (%)					
Real GDP	9.5	7.7	7.7	7.3	6.9
Primary industry	4.2	4.5	3.8	4.1	3.9
Secondary industry	10.6	8.2	7.9	7.3	6.0
Tertiary industry	9.5	8.0	8.3	7.8	8.3

(Source) Prepared from data published by National Statistics Bureau of China

According to details of the industry-by-industry GDP breakdown, the manufacturing industry has made the greatest contribution to the real GDP growth rate. Since 2011, however, its contribution has continued to decline. Instead, the financial industry has increased its contribution since 2011. In 2015, particularly, the financial industry rapidly increased its contribution to real GDP growth, accounting for about 17% of the growth (see Figure 2). In 2015, the financial industry's share of nominal GDP reached 8.5%, greater than 4.5% in Japan in 2013 and 8% in the United States in 2012.

Figure 2 China's real GDP growth broken down by industry



(Source) Estimated and prepared from data published by National Statistics Bureau of China

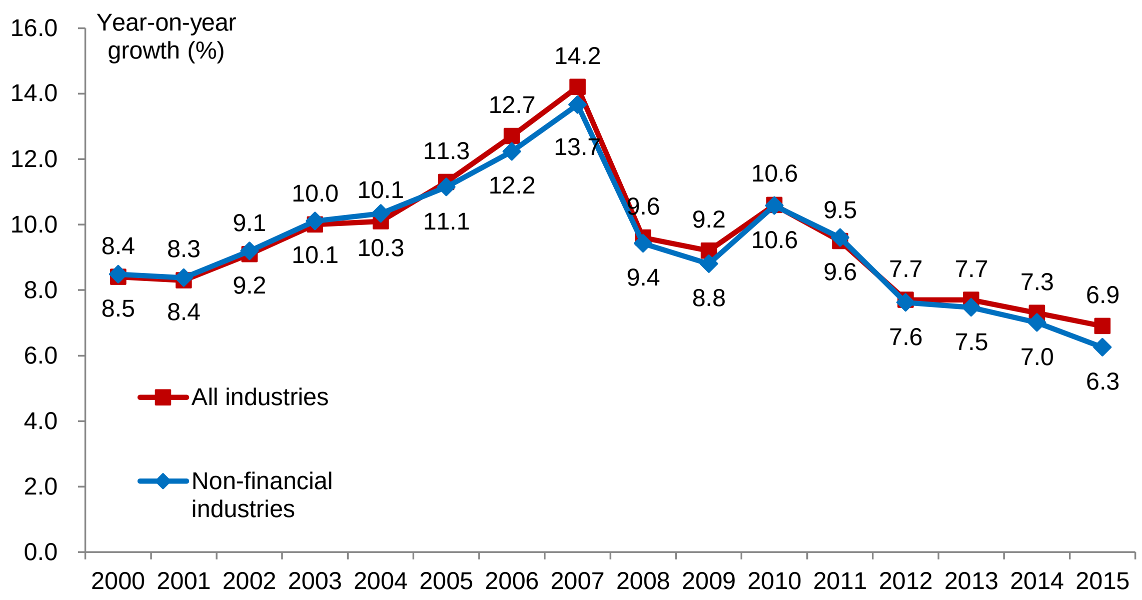
The financial industry's added value growth has been closely linked to stock prices. Chinese stock price hikes from the second half of 2014 to the first half of 2015 apparently led to a sharp increase in added value for the financial industry in 2015 (see Figure 3). This is a major factor that drove up Chinese GDP more than indicated by the real economy.

Figure 3 Changes in Chinese financial industry's added value growth and stock index

(Source) Prepared from data published by National Statistics Bureau of China and Tencent Financial and Economic Data

Figure 4 indicates GDP growth for all industries and that for non-financial industries. Until 2014, the two GDP growth rates had been almost the same, except for the 2006-2007 period when stock prices were high. In 2015, however, their deviation became the largest ever, with the GDP growth for non-financial industries being 0.6 percentage points lower than that for all industries. Excluding the financial industry that boosted its added value thanks to stock price hikes, China's GDP could have grown by 6.3% in 2015.

Figure 4 GDP growth for all industries and for non-financial industries



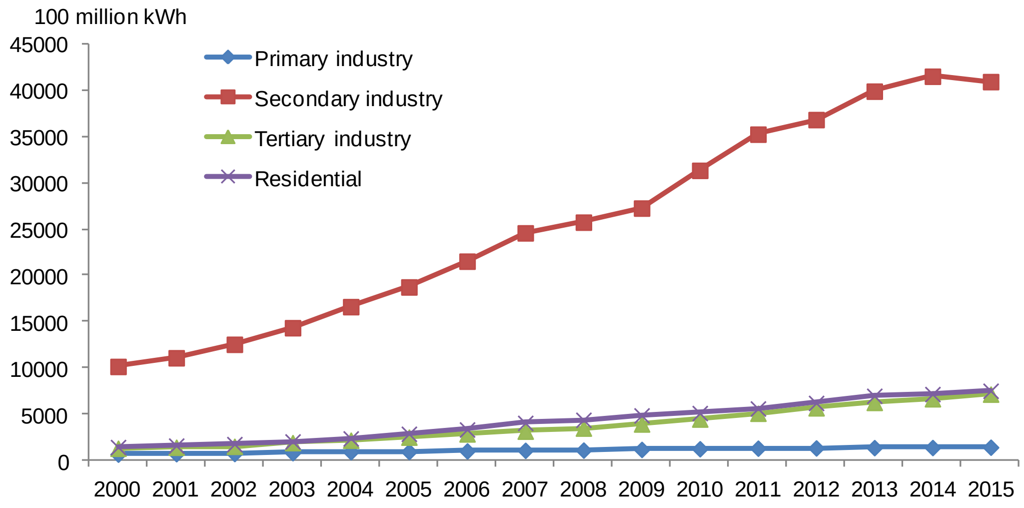
(Source) Estimated and prepared from data published by National Statistics Bureau of China

■ Industry-by-industry economic growth and electricity consumption growth

Even if real GDP growth is 6.3%, its deviation from the 0.5% increase in electricity consumption is too large.

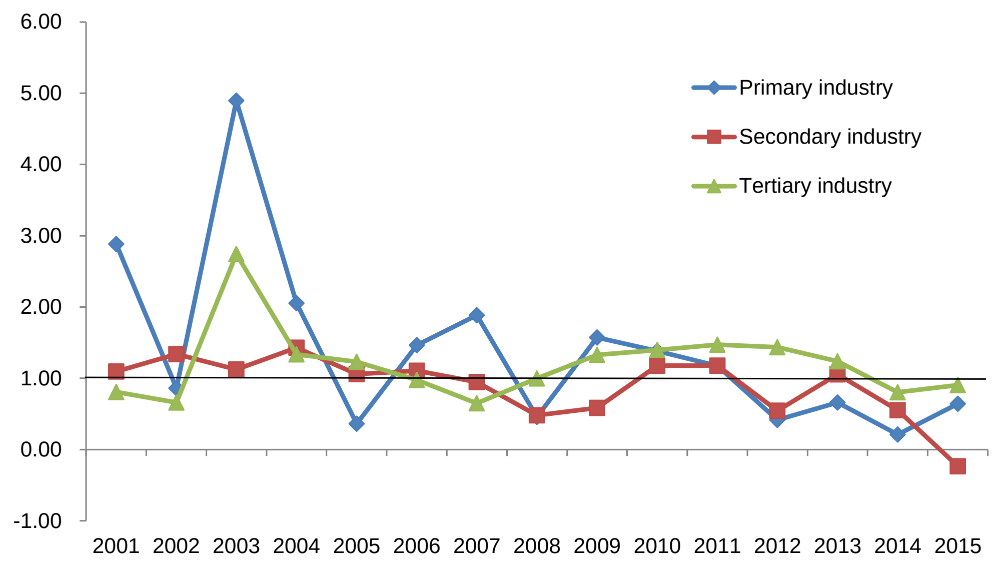
In 2015, electricity consumption grew by 2.5% in the primary industry, by 7.5% in the tertiary industry and by 5.0% in the residential sector while declining by 1.4% in the secondary industry which is accounting for more than 70% of total electricity consumption (see Figure 5). The decline in the secondary industry was the first ever since 1980. The GDP elasticity of electricity consumption was 0.64 for the primary industry and 0.90 for the tertiary industry, remaining almost unchanged from the average for the past years. However, the elasticity for the secondary industry slipped below 0.6 for the first time since 2001, plunging into negative territory.

Figure 5 China's electricity consumption by industry



(Sources) Estimated and prepared from data published by China Energy Statistics Yearbook and China Electricity Council

Figure 6 GDP elasticity of electricity consumption for China's tertiary industry



(Sources) Estimated and prepared from data published by China Energy Statistics Yearbook, National Statistics Bureau of China and China Electricity Council

A further insight into the secondary industry's electricity consumption in 2015 indicates that consumption in the light manufacturing sector posted a 1.3% increase, far slower than the 2010-2015 average of 4.7%. The heavy manufacturing sector, which accounts for 80% of the secondary industry's energy consumption and nearly 60% of China's total energy consumption, recorded a 1.9% drop. Behind the drop, crude steel production declined by 2.3%, the first fall in 35 years, with cement output decreasing by 4.9%. Compared with recent trends, the rapid decline in the GDP elasticity of electricity consumption in the secondary industry in 2015 was too dramatic. The deviation between the officially announced 6.0% increase in added value and the 1.4% decrease in electricity consumption was excessively large.

■ Conclusion

Without a substantial contribution by substantial growth in the financial industry's added value through a sharp stock price hike, China's real economic growth in 2015 could have been 6.3% or less, rather than the officially published 6.9%. As the tertiary industry's share of GDP exceeded 50%, the tertiary industry's growth mitigated the growth deceleration in the secondary industry. Nevertheless, the deviation between the officially published change in the secondary industry's added value and the electricity consumption change was too large.

Economic and energy statistics in 2015 indicate that we must carefully watch industrial structure changes in considering future energy demand and carbon dioxide emissions in the Chinese economy now at a major turning point.