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WSD's steel experience, steel database and availability of steel statistics are the principles for performing steel forecasts, studies and analysis for international clients. WSD seeks to understand how the "pricing power" of steel companies the world over will be impacted by changes in the steel industry's structure.

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China Steel: Growth Gone

The Chinese steel industry in 2000–2013 experienced remarkable growth, reflecting: (a) the immense growth of steel demand in the country, as adjusted fixed asset investment (FAI) as a share

of gross domestic product (GDP) soared to about 48% from 35% in 2000; and (b) the incredible array of steel plants and supporting facilities that were built quickly for a low cost. Chinese steel

Table 1

Effective Steelmaking Capacity and Capital Spending Outlook — China (million metric tons, except capital outlays)

Year	Gross capacity (mmt)	Effective capacity (mmt)	Ratio effective capacity/gross capacity	Capital outlays (billion \$)	Steel production (mmt)	Capital outlays per metric ton produced	Operating rate (%)
2004	368	302	0.82	20	283	\$71	93.8
2005	435	379	0.87	28	353	\$80	93.3
2006	515	469	0.91	29	419	\$69	89.4
2007	590	537	0.91	34	489	\$69	91.0
2008	648	590	0.91	47	500	\$93	84.8
2009	738	672	0.91	47	576	\$81	85.7
2010	817	743	0.91	51	630	\$81	84.7
2011	872	811	0.93	60	702	\$86	86.6
2012	940	874	0.93	80	731	\$109	83.6
2013	1,000	930	0.93	82	790	\$104	84.9
2014	1,040	967	0.93	70	815	\$86	84.3
2015	1,065	990	0.93	60	825	\$73	83.3
2016	1,075	1,000	0.93	40	830	\$48	83.1
2017	1,050	987	0.94	40	835	\$48	84.6
2018	1,050	987	0.94	40	840	\$48	85.1
2019	1,025	964	0.94	40	845	\$47	87.7
2020	1,025	964	0.94	40	850	\$47	88.2

production in 2014 is forecast at 815 million metric tons versus 129 million metric tons in 2000 — a 14% compounded per annum growth rate over this period.

Looking ahead to 2020:

- Chinese steel production is forecast at 850 million metric tons, up just 35 million metric tons from 2014 (Table 1). One factor restraining steel production will be a massive decline in new apartment construction in the country (as discussed below). Residential construction activity currently accounts for about 26% of reported FAI in the country.
- Effective (real) steelmaking capacity may be about 964 million metric tons. This figure is little changed from the present time, as the elimination of marginal plants about offsets the capacity additions.
- Capital spending falls back to about US\$40 billion or less. The figure is still enormous, but far below the US\$82 billion in 2013 and about US\$70 billion this year. On a per-metric-ton-produced basis, the steel industry's capital spending by 2020 declines more than 50%.
- The effective (real) capacity operating rate rises to about 88% versus 84% in the current year.

Chinese Steel Demand Likely to Be Lower in Several Years

The outlook for Chinese residential construction has become dire. Although year-on-year residential construction activity was up sharply as of July 2014 because of the sizable backlog of projects under way at the start of the year, housing prices are down in most provinces (although not yet precipitously). Land sales and the start-up of new residential construction projects, including apartments and commercial buildings, through July 2014, are down approximately 4.8% and 12.8%, respectively, on a year-on-year basis. Residential construction in China, which includes commercial construction, accounts for about 26% of the country's FAI that, on an adjusted basis, accounts for about 48% of the country's GDP (Table 2).

The FAI trend in China — i.e., construction and capital spending — is critical because it accounts for about 90% of Chinese steel demand. The country's massive construction activity explains how and why rebar production in 2014 may be about 215 million metric tons versus 206 million metric tons last year. The U.S., by way of comparison, produces only about 6 million metric

tons/year; this is low in part because U.S. houses tend to be made of wood, while Chinese are made of concrete.

Booming residential construction activity is one of the major reasons for the sharp rise in the Chinese municipalities' debt in recent years. However, it's not the reason for the surge in shadow banking loans that, due to their high interest rate, are used principally for near-term financing needs such as working capital for inventory.

The square meters of housing and commercial buildings under construction as of 31 July 2014 were reported at 6.3 billion. If two-thirds of this figure is for apartments with an average size of 100 square meters, it is derived that about 41 million apartments are under construction for completion largely in the 2014–2016 time frame. Given three residents per apartment, these apartments would house about 9% of the Chinese population. Some observers in China conjecture that about 20% of the new apartments are not occupied; often, instead, they are purchased for capital appreciation. The apartments can be held for investment in part because the cost to maintain and upkeep the less expensive ones

Table 2

China Floor Space Under Construction and Completed (million m²)

	Dec-06	Dec-07	Dec-08	Dec-09	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14
Floor space under construction	3,421.4	4,129.9	4,741.3	5,743.7	7,060.6	9,187.9	10,598.9	12,438.9	13,200.9
Residential building	1,868.3	2,261.4	2,615.3	3,108.7	3,768.2	4,669.6	5,136.9	5,727.5	6,100.0
Floor space completed	1,120.9	1,270.4	1,281.0	1,574.0	1,673.8	2,189.7	2,401.3	2,534.6	2,650.0
Residential building	594.1	661.3	658.1	788.8	834.3	991.4	1,069.3	1,067.6	1,200.0
Ratio of completed/ under construction	0.33	0.31	0.27	0.27	0.24	0.24	0.23	0.20	0.20
Ratio for residential	0.32	0.29	0.25	0.25	0.22	0.21	0.21	0.19	0.20

may be only about 2 RMB (US\$0.33) per square meter per month.

For the seven months ended 31 July 2014, residential construction rose 11.3% to 6,327 million square meters, while sales fell 8.2% to 3.6 trillion RMB. As noted in Table 3, unsold apartments as of year-end 2014, including apartments built prior to 2014, may amount to about 56% of the residential and commercial buildings completed in the year.

Chinese rebar production, in the opinion of Liu Jinghai, WSD's director of Chinese research and a professor of the Chinese Iron & Steel Association, is likely to decline at least 20% in the next three years. He estimates that about one-third of the rebar produced in the country is used in residential construction. ♦

Table 3

China Residential Housing and Commercial Building Completion and Sale

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014e
Completed 10,000 m ²	53,417	55,831	60,607	66,545	72,677	78,744	89,200	99,425	101,435	109,550
Year-on-year, %	25.8	4.5	8.6	9.8	9.2	8.3	13.3	7.3	2	8.1
Unsold 10,000 m ²	14,679	14,550	13,463	18,626	19,947	21,565	27,194	36,460	49,295	61,126
Year-on-year, %	2.7	(0.9)	(7.5)	38.3	7.1	8.1	26.1	27.0	35.2	24.5
Ratio of unsold/completed, %	27.5	26.1	22.2	28.0	27.4	27.4	30.5	36.7	48.6	56



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