



is a leading steel information service in Englewood Cliffs, N.J., USA

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. The views and opinions expressed in this article are solely those of World Steel Dynamics and not necessarily those of AIST.



Authors

Peter Marcus (left) managing partner, World Steel Dynamics pmarcus@worldsteeldynamics.com +1.201.503.0902

John Villa (right) research strategist, World Steel Dynamics jvilla@worldsteeldynamics.com +1.201.503.0911

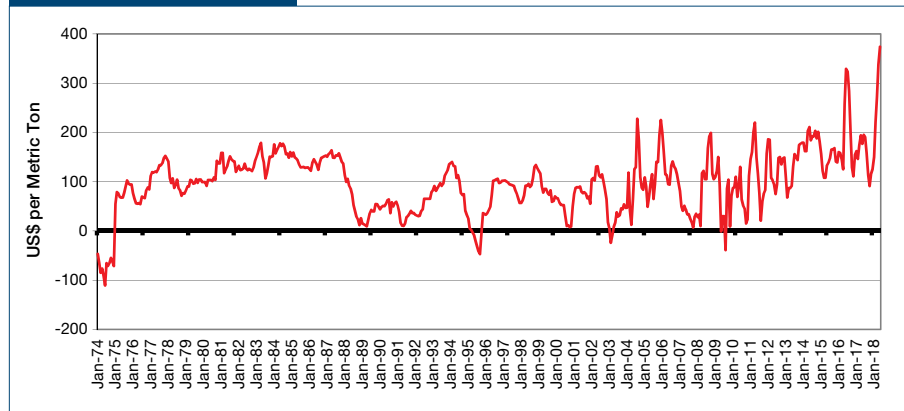
HRB pricing hijinks: Expect the unexpected

The world hot-rolled band (HRB) export price (FOB the port of export), the Chinese domestic HRB price (ex-works excluding the 17% value-added tax) and the U.S. HRB price (FOB the steel mill) often move in the same direction; although there are major exceptions.

Looking back to 2001 through 2003, the Chinese and U.S. home market HRB prices were at roughly the same level. During this time, there was a continued sizable shortfall of HRB production in China due to sharply rising demand. Since

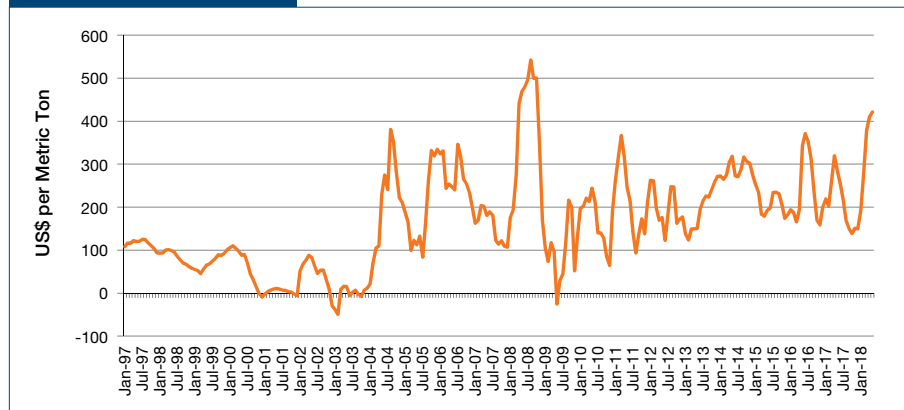
then, despite surging demand, the Chinese mills' massive investment programs have permitted them to satisfy rising Chinese HRB demand. Currently, about 70 wide hot strip mills are vying for the roughly 210-million-metric-ton-per-year HRB market in the country. (Note: Chinese steel production in 2003 at 222 million metric tons compares to the current annualized rate of more than 900 million metric tons — for a compound annual growth rate of 9.85% per year.)

Figure 1



Spread: U.S. hot-rolled band less world export spot price. Source: WSD Price Tracker & SteelBenchmarker™.

Figure 2

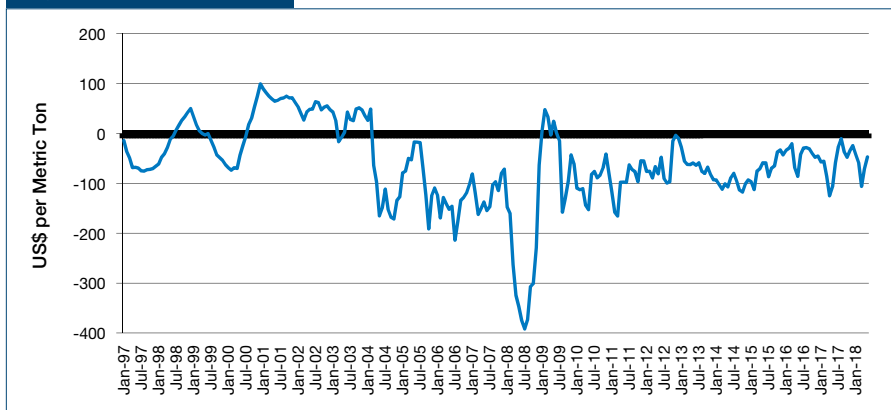


Spread: U.S. hot-rolled band less China home market hot-rolled band price. Source: WSD SteelBenchmarker™.

Let's examine the HRB price on the world market, in China and in the U.S. at some of the highs and lows in the past 15 years:

- At the near-lows in May 2003, the export price per metric ton of US\$280 compared to US\$298 in the U.S. and US\$283 in China.
- At the shortage highs in September 2004, the export price per metric ton of US\$640 compared to US\$824 in the U.S. and US\$472 in China.
- At the lows in December 2005, the export price per metric ton of US\$400 compared to US\$625 in the U.S. and US\$291/metric ton in China.
- At the highs in July 2008, the export price per metric ton at US\$1,113 compared to US\$1,218 in the U.S. and US\$721/metric ton in China.
- At the near-lows in May 2009, the export price per metric ton at US\$396 compared to US\$395 in the U.S. and US\$420/metric ton in China.
- As of early June 2018, the export price per metric ton at US\$590 — down about US\$40/metric ton since March 2018 — compares to US\$978/metric ton in the U.S. and US\$568/metric ton in China.

Figure 3



Spread: China home market hot-rolled band price less world export hot-rolled band price. Source: WSD SteelBenchmarker™.

Given the June 2018 prices and WSD's monthly World Cost Curve estimates for May 2018, many steel mills are enjoying a "Golden Profit Age." As of May 2018 for the median mill, the HRB operating cost was US\$478/metric ton in China, US\$517 per metric ton in the U.S. and US\$491/metric ton for all non-Chinese mills. The marginal cost for these mills was US\$424/metric ton, US\$457/metric ton and US\$429/metric ton, respectively.

This report includes forward-looking statements that are based on current expectations about future events and are subject to uncertainties and factors relating to operations and the business environment, all of which are difficult to predict. Although WSD believes that the expectations reflected in its forward-looking statements are reasonable, they can be affected by inaccurate assumptions made or by known or unknown risks and uncertainties, including, among other things, changes in prices, shifts in demand, variations in supply, movements in international currency, developments in technology, actions by governments and/or other factors. ◆

Did You Know?

AI Emerging as a New Steelmaking Benchmark, Silicon Valley Executive Says

Mills that hesitate on deploying machine learning technologies will do so at their own peril, according to Noodle.ai chief executive officer Stephen Pratt.

"Any mill that is not using these techniques in a few years is going to be behind. This is going to be a new competitive benchmark. You see this emerging now. The companies that are using this are outperforming other companies," Pratt said, speaking during a discussion about steel industry digitalization at the annual Steel Success Strategies conference in New York City in June.

Pratt's company provides supercomputing and machine learning services to a number of businesses, most notably to Arkansas-based Big River Steel.

"It's a very exciting time. There's tremendous opportunities and upside in metals manufacturing," Pratt said.

Big River incorporates Noodle.ai's artificial intelligence throughout its operations. The technology is called upon to handle a number of functions at Big River, such as scheduling optimization, predictive maintenance and demand prediction.

Although Noodle.ai works with businesses in other sectors, Pratt said the company is particularly excited about steel.

"We're in steel because there's lots of data. The conditions are right in steel because of the sensorization and the data availability," Pratt said.