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



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The power of the reward/risk ratio

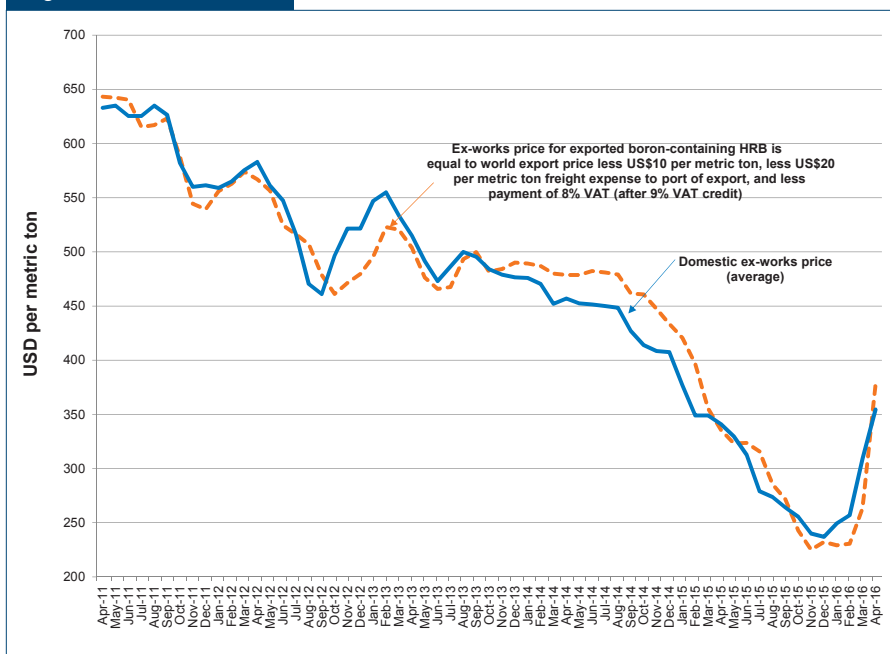
Rapid swings in the psychology of the steel marketplace, with the steel buyer at times being advantaged and disadvantaged, are a normal circumstance in the steel industry. What we know is that, when prices appear to be extremely depressed, there seems to be a greater upside price potential relative to the downside — in other words, price allocates resource. We also know that the steel export price outlook is always a wild card.

In order to have better insight into when a substantial shift — let's call it a reverse — in market psychology may be imminent, WSD has decided to calculate continually the reward/risk (R/R) ratio for the price of hot rolled band (HRB) on the world market, in China and in the United States. In China's case, at least up to the time of this writing, the mills' ex-works HRB price for the domestic market has tended to move closely with and be about the same as its export price. The Chinese don't have the luxury, as

steelmakers do elsewhere, of being able to dump their product on the world market at a far lower price than their home price.

In December 2015, the Chinese export price, which was being matched by steelmakers in many other countries, declined to only about US\$270/metric ton, FOB the port of export. After subtracting the 8% value-added tax on exports — only the Chinese pay an export tax — and an average freight cost to the port of export of US\$20/metric ton, including loading the steel on the ship, the Chinese steel mills' ex-works export price realization was only about US\$225/metric ton. This figure is comparable to the marginal cost of the median-cost Chinese mill last December, based on WSD's monthly updated World Cost Curve for 180 steel plants globally, of US\$302/metric ton including plant overhead costs. Hence, the median-cost Chinese steel mill was suffering a US\$77/metric ton loss compared to

Figure 1



Chinese HRB ex-works export price versus domestic ex-works price. Sources: WSD'S World Cost Curve for Flat Rolled Sheet and SteelBenchmarker™.

its marginal cost — a figure relative to steel mills' costs globally that was, by far, the worst in the history of the steel industry in WSD's opinion.

Last December, from the steel buyer's viewpoint, if there was US\$20/metric ton of risk in the price and US\$170/metric ton of reward, the R/R ratio would be 8.5X. In comparison, in May 2016, the world export price was about US\$500/metric ton, FOB the port of export, or 85% higher than in December 2015. If the May 2016 reward price is US\$575/metric ton and the risk price is US\$325/metric ton, the R/R ratio is only 0.4X.

What developments might cause the steel buyer, in his or her mind, to raise the reward price to an even higher figure? One development could be a sharp improvement in the global economic outlook — an unlikely

occurrence in WSD's opinion. In fact, WSD thinks that global steel production in 2016 will be down because of reduced steel demand.

Because the R/R figure was so low in May 2016, WSD expects that at some point in the period just ahead there will be a marketplace "chill" in which steel buyers decide to "sit on their hands" and stop ordering ahead to as great an extent as possible. This chill could be precipitated by a decline in international iron ore or steel scrap price.

What's great about the calculation of the R/R ratio is that it's based on a subjective judgment by the steel marketplace observer about what's in the mind of the steel buyer. Economics is the study of the human equation in the marketplace.

Age of steel complexity

The many factors driving the steel business, along with its complexity, make it an industry in which the kaleidoscope never stops spinning; and the shards of colored glass that are often flying away from the main body provide us with advance signals, often false, of forthcoming changes in the industry's industrial structure.

Here are some of the "ages" impacting the steel industry:

- Age of Chaos. Unexpected events are coming.
- Age of Slow Global Steel Demand Growth. Given the likely 100-million-metric-ton decline in Chinese steel demand by 2025, global steel demand growth will be minor.
- Age of Steel Price Volatility. This factor applies also to the prices of steelmakers' raw materials.
- Age of Steelmaking Capacity Rationalization. The steel business is too capital-intensive, with fixed costs too high and profit margins too low for steel mills to maintain much idled capacity in a ready-to-operate condition.
- Age of Trade Suits. Steel mills without import protection will die.
- Age of the Chinese Steel Industry Bus Crashing Into the Great Wall. Severe marketplace competition is neverending given the country's 90+ wide hot strip mills.
- Age of M&A Opportunity. These are appearing almost daily, including the purchase of existing plants at a bargain price.
- Age of Diminished "Economic Rent" for Iron Ore and Coking Coal Producers. Oversupply is a potent downside force.
- Age of the Failure of Steel Industry Concentration. There are too many mills, and multi-plant mills are unintegrating.
- Age of the Continuing Revolution in Steelmaking Technology. It levels the playing field and threatens many.
- Age of Low Steel Scrap Prices. The Chinese obsolete steel scrap reservoir that's, on average, 10–40 years old will rise from about 80 million metric tons in 2015 to 200 million metric tons in 2025 and 400 million metric tons in 2035.
- Age of Severe Competition for Automotive Steel Sheet. High-megapascal and more formable steel sheet are preventing further aluminum sheet inroads.
- Age of Rapid Swings in the Psychology of the Steel Marketplace.
- Age of Liquid Steel Futures Curves. Once in place, most steel industry participants, their suppliers and customers will be hedging the steel price risk.
- Age of Management. All companies need a great submarine commander at their helm.
- Age of the Chinese Scapegoat. The Chinese are blamed to cause all the steel industry's ills.

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. ◆