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February 2016

Weathering the steel crisis

Traditional levers acting on costs and capacity might not be the critical ones: innovation supply-chain reactivity and client intimacy will play a differentiating role

THE BIG

3

3.3%

reduction in demand for steel in China in 2014.

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>50%

drop in share value of the three main players in one year
despite reasonable volume growth.

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4th

industrial revolution will affect steel companies too.

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The global steel industry is again facing severe global overcapacity, leading to a dramatic drop in the price of steel and more intense competition.

The extent and the duration of this latest crisis will inevitably lead to further restructuring, a reduction in capacity and an increase in M&A activity. However, it will also unearth new opportunities to maximize business by reacting quickly, specializing, innovating and ultimately entering into more intimate partnerships with clients. By failing to reflect on what could make them strong and successful, the incumbent major players may not come out of this crisis with renewed vigor compared to more agile players.

After a brief sense of optimism in 2013 and 2014, the growth of the global steel market has come to a halt.

In Europe, although the demand for steel has seen a moderate increase at around 2%, it has failed to reach pre-crisis levels.

In China, after a peak in 2013, the demand for steel decreased by **3.3%** in 2014 with further decline confir-

med for 2015 and expected until 2020, mainly driven by a deflationary construction industry (10% reduction of building sales in the construction market) and a drop in infrastructure requirements, both of which have only been partially offset by increases in the automotive industry.

In North America, overcapacity is expected to remain at current levels until at least 2020 due to the balancing effects of the increase in automotive and aerospace consumption (a record high in 2015) and a reduction in demand in the oil and gas sector.

Increasingly globalized markets and the accessibility of supply have pushed exports from China or Eastern Europe to other zones (Western Europe, UK, US). Regions such as Europe, which had managed to adjust territorial capacities, have been unable to prevent prices for most products from dropping further. The US market has experienced the same phenomenon.

This same applies to other open markets such as the UK or Eastern European countries largely awash with Belarussian or Ukrainian imports, particularly on longs.

These developments have led to a spectacular drop in prices in all value chain segments. → **A**

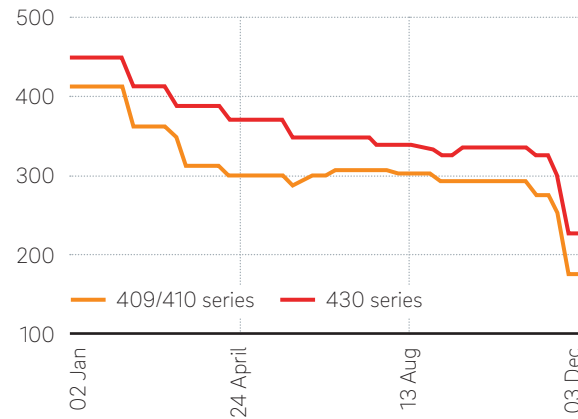
A

A SPECTACULAR DROP IN PRICES

Most analysts believe that this pressure on prices will remain for the short to medium term, as growth will not be high enough to absorb existing capacity.

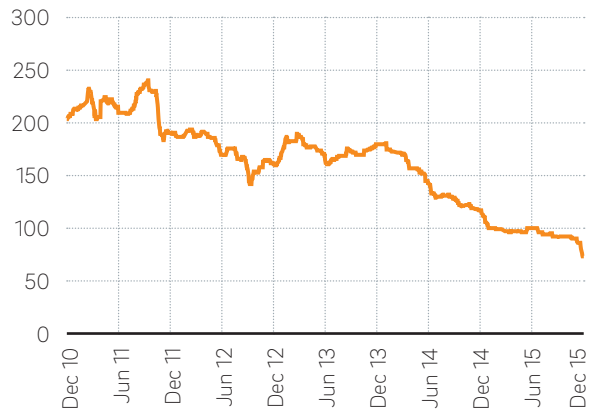
EVOLUTION OF STAINLESS STEEL 400 SERIES PRICES [USD/t, 2015]

Source: argusmedia.com



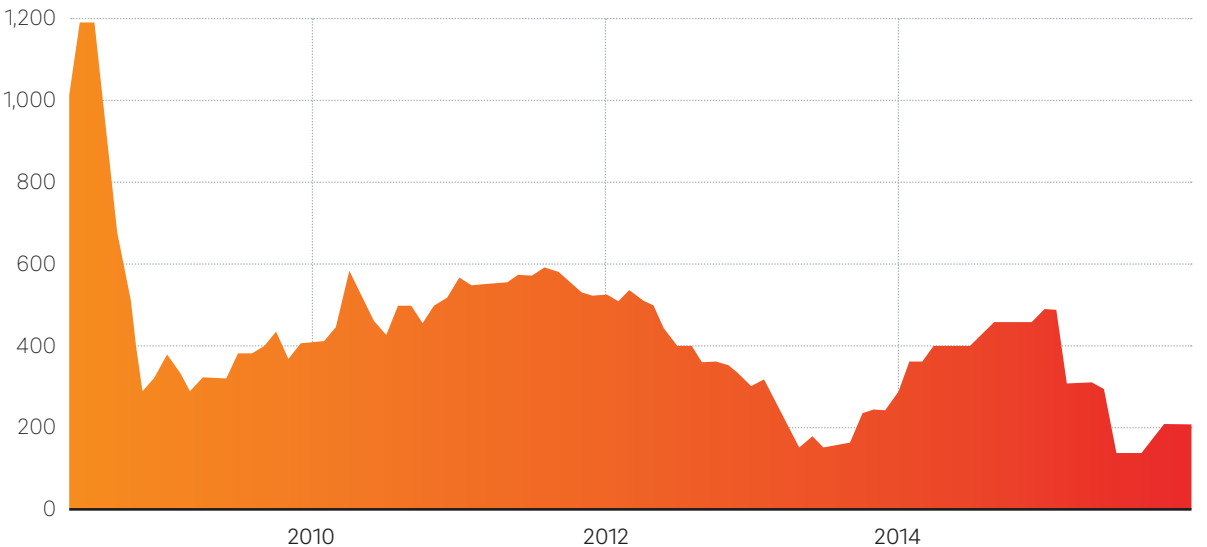
EVOLUTION OF IRON ORE SPOT PRICE [China, Hebei/Tangshan, USD/t, 2010-2015]

Source: Source: Bloomberg - 01/12/2015



EVOLUTION OF STEEL PRICE [USD/t]

Source: www.tradingeconomics.com



All players along the value chain need to adapt further.

1. COST MANAGEMENT AND CAPEX CUTS PROGRAMS REMAIN PROMINENT

During 2012/2013, a decrease in prices had already been anticipated because of the planned increase in capacity. To remain competitive, most players had already launched cost reduction programs, they now need to change up a gear. After reducing operating costs by USD 4.8 Bn in 2014 compared to 2012 level, Rio Tinto announced another round of cost reduction initiatives during its H1 2015 results presentation. In the meantime, BHP, the Anglo-Australian mining company also announced plans to reduce iron ore unit costs at its Western Australia operations by 21 percent from just below \$20 per ton to \$16 per ton in the 2016 financial year.

Anglo American, the world's fifth-biggest diversified global mining group by market value announced in December 2015 that it will restructure its business cutting 85,000 jobs. Indeed, the London-based mining giant which has large operations in South Africa, Chile and Australia plans to overhaul its business by selling assets, shutting mines, cutting jobs and suspending dividend payments. ArcelorMittal also decided to launch a restructuring program, especially in Liberia where it will cut 450 jobs to offset losses caused by the global decline in the price of iron ore.

As giants start to lower their cost base but continue to supply the market, regional or local players are all the more exposed to the risk of collapse as their cost bases are generally higher. Companies like SNIM in Mauritania are now facing severe cash issues and are said to be looking for cash support.

2. SELL-OFFS AND CAPACITY CLOSURE ACCELERATE

As there is little expectation that prices will increase in the short term, cost cutting programs may not be sufficient to maintain the cash-flow needed for investment and equity return. A wave of capacity reduction and sell offs has started in 2015 and will accelerate in 2016.

Some have already paved the way: Glencore announced in March 2015 that it was taking large impairments on current iron ore projects in Mauritania and Congo, and was open for discussions with potential bidders. In Australia, Fortescue confirmed in October 2015 that it was pursuing conversations with several Chinese players for the disposal of part of its mines and the related infrastructure including ports.

At the same time, the combination of lower prices and higher costs has resulted in a number of production cuts and idling in the manganese sector. Samancor, a joint venture between Australia South32 and the global firm Anglo American has halted mining operations. The firm has also shut down three of its four ferro-manganese furnaces. The country's second largest producer, Assmang, has idled seven ferro-manganese furnaces across its Machadodorp and Cato Ridge sites as it undertakes a review. South African producer International Ferro Metlas has also stopped producing and ASA Metals is operating only one in four furnaces. This has become a global phenomenon: In China, a number of producers in Inner Mongolia have cut or idled production in response to the steelmakers' tender price; in Slovakia, ferro-alloy producer OFZ will convert its ferro-silicon furnace to silicon production by April 2016 in response to low prices.

3. AS A RESULT, RESTRUCTURING PROGRAMS ARE ONGOING AT ALMOST ALL MAJOR STEEL COMPANIES

Many major players are currently re-launching restructuring measures. Starting in most affected markets such as the UK and the US, we believe that the movement will rapidly spread further across Western Europe, the US and potentially China according to the latest government press release).

For example, Tata Steel announced on October 2015 1,200 job losses at its UK sites. Tata's chief executive acknowledged that "[they had] looked at all other options before proposing these changes. The UK steel industry is struggling for survival in the face of extremely challenging market conditions. This industry has a crucial role to play in rebalancing the UK economy, but we need a fairer system to encourage growth".

"Concerning China", a report issued by Moody's in November 2015 confirmed that reductions incapacity and restructuring will accelerate over the next 3 years in China, in view of weak business conditions. Specifically, small private steel mills may first exit the market, as they have limited resources to cover business losses, cash flow shortfalls and refinancing of maturing debt. Additionally, rising environmental compliance costs add to the pressure on inefficient, sub-critical steel mills. There is, however uncertainty about the real magnitude or rhythm of this adaptation, leading many to believe that Chinese overcapacity will continue to severely impact market prices for some years ahead.

Vallourec, the specialist for seamless tubes for the oil sector, will reduce its workforce by 2,000 jobs worldwide (down about 10%), as a key initiative to reduce its cost base by 350 million euros over 2015-2016. Europe is particularly affected: France will contribute up to 900 positions – from about 5,000 employees – and Germany up to 600. These announcements are in addition to the restructuring plan already announced in February 2015, which planned for the removal of 15% of hours worked in the factories of the Group, the equivalent of 1,400 jobs worldwide, including 200 in France.

In North America, US Steel announced at the end of August 2015 the permanent closure of its blast furnace and most of the flat-rolled finishing operations at its Fairfield Works near Birmingham, Alabama. 1,100 out of the 2,000 jobs at the steel mill complex will be affected by this move. In the meantime, restructuring is ongoing in the company's Pittsburgh headquarters.

YEAR ON YEAR SHARE PRICE EVOLUTION OF TOP 4 NYSE-LISTED STEELMAKERS

-70%	United States Steel Corporation
-65%	ArcelorMittal
-50%	Posco
-20%	Nucor

A company spokeswoman confirmed that "they are continuing to adjust headcount to align with operational and business needs".

4. DISTRIBUTION IS RAPIDLY REORGANIZING

Distributors do not stay remote of these restructuring actions as the weaker demand added to price reduction reduces their unitary margins and puts pressure on their overheads and structure costs. European leaders such as Klöckner are currently undertaking major restructuring of operations in Europe as their margins are under increasing pressure. Pressure to restructure has also increased in the US. Chinese distribution sector has also seen a number of failures in the last two years, including subsidiaries of major global players.

Some structural movements are already visible in distribution. A generalist steel or metals distribution company is hardly able to generate profit on its own (with margins that are too low for expensive architecture), consequently we see players beginning to specialize in three business groups:

- special steel or special metals distribution (generally along with service centers);
- "retail" business along with a broader range of products such as small tooling, etc. for craftsmen or even individuals;
- large volumes for industry, either owned by or outside of a steel group, with particular selectivity on clients, regions, and the search for value added services to the clients, such as cutting, machining, etc.

Distributors are visibly activating three key levers: client intimacy before product range, regional selectivity before global presence, and value added services before volume strategy. We believe that this may well be the way to go forward as we look at how the steel industry could emerge stronger from the crisis.

Consolidation may not be the main future driver.

New profitability drivers are emerging: early adoption is the route to success.

1. CLIENT FIRST: INTIMACY, VALUE ADDING SERVICES, AND SPECIALIZATION

For a long time now, steel makers have been forced into reinforcing their links with their automotive clients, notably as a reaction to the increasing use of aluminum. The robust development of special steels (high tensile, high resistance...), has largely benefited from this move. The automotive industry has followed the main trends imposed by clients and end-customer requirements:

- Product mix: demand (especially in Europe) is shifting from large vehicles towards smaller ones (trend partially offset by the trend for heavier SUVs)
- Advanced high strength steel (AHSS) / alternative materials: development of AHSS enables manufacturers to build lighter vehicles with greater structural rigidity and allows for the replacement of some steel parts by lighter materials, such as aluminum and carbon fiber
- Downsizing / electrification: fewer cylinders, redundancy of certain steel-intensive parts, e.g. crankshaft, piston rods

The current period is an opportunity for steelmakers to interact more closely with clients and influencers in other sectors, and to apply successful recipes from elsewhere to the automotive industry.

Indeed, companies not always familiar to steelmakers are driving change while they influence their clients, and transforming the way business is done. Additionally in some segments such as construction, energy, or mechanical engineering, the impact of new techniques on the demand for steel is difficult to anticipate in advance (direction of impact, magnitude) and the use of digital/interactive tools is not always a priority within marketing or commercial teams. Thus improving interaction requires building relationships with key players such as robot manufacturers in order to identify needs, propose innovations and create teams. The same applies to additive manufacturing, from which impact or opportunities remain to be clearly identified as they require regular and constant monitoring.

As well as this, investments in renewable energy sources are expected to increase, supported by binding national objectives and subsidy / support schemes

(e.g. price guarantees) as technologies such as wind and photovoltaics replace conventional power plants. This will impact positively on steel production. Continuous growth is also expected in offshore wind parks with replacements possibly being required earlier than originally expected, according to latest research (shorter life times due to accelerated wear in marine conditions).

In addition to closer relationships with players and influencers, creating a durable competitive advantage can also be achieved by strengthening links between customers, and in some cases their customers further down the chain (such as technology developers), R&D and marketing teams to identify and generate blockbusters and reduce time to market. **INDUSTRY 4.0** is already shortening market cycles and making the demand for steels and alloys more variable, granular and diversified

Even in traditional sectors such as infrastructure for instance, steel makers can increase their value proposition by integrating and developing more engineering solutions to provide their clients with a full range of products, which could also increase their company's market penetration.

THUS STEELMAKERS CAN ACTIVATE SEVERAL LEVERS

- Integrate R&D and marketing (at least in terms of process) to move faster from client needs to R&D, then R&D to product (time-to-market)
 - Focus R&D efforts on specific segments (e.g. do home appliances need a high level of research given size and issues?)
 - Push and incentivize the identification, quantification (business case) and generation of blockbusters (example of steel tile roofs in Poland)
 - Co-conceive future steel solutions with clients, but also with potential partners (to combine offers on a segment by segment basis)
 - Potentially look for more R&D partnerships with clients.
-

An option can also be for steelmakers to set-up their own "start-up" or "innovation factory", (in processes, client relationship or end-customer use) as Roland Berger does with other industrial players: ideas are incubated, tested and developed, into a specialized entity with new companies being integrated, sold or developed internally as and when they fit the business strategy.

2. PRODUCTION MATTERS: INCREASE OF SUPPLY CHAIN AND COMMERCIAL REACTIVITY NEEDED

In order to adapt to new commercial positioning, steelmakers need to adjust their supply chain and commercial approach by increasing reactivity and their ability to manage complexity. Levels of, complexity will certainly increase, notably following the penetration of high grade steel volumes. At the same time, industry 4.0 will demand greater flexibility and shorter lead times, higher levels of customization and smaller lots.

The flexibility and reactivity of the supply-chain is also key to reducing pressure from imports. In a world where steel products can now be acquired through platforms like Alibaba.com, differentiation is needed via service as distance or referencing are not a protection anymore. Steelmakers should develop a model allowing for shorter delivery lead times, thus differentiating them from competitors while at the same time raising barriers to entry against more "generic" imports. They should also develop a complexity management framework and internal policy, addressing such issues as where to locate complexity in the value chain; establishing which level of complexity is acceptable in mills and/or in finishing/service/distribution thus enabling them to deal with the issues of complexity management deal with it. → **B**

3. REGARDING THE ORGANIZATION: REGIONAL SELECTIVITY TOPS GLOBAL PRESENCE

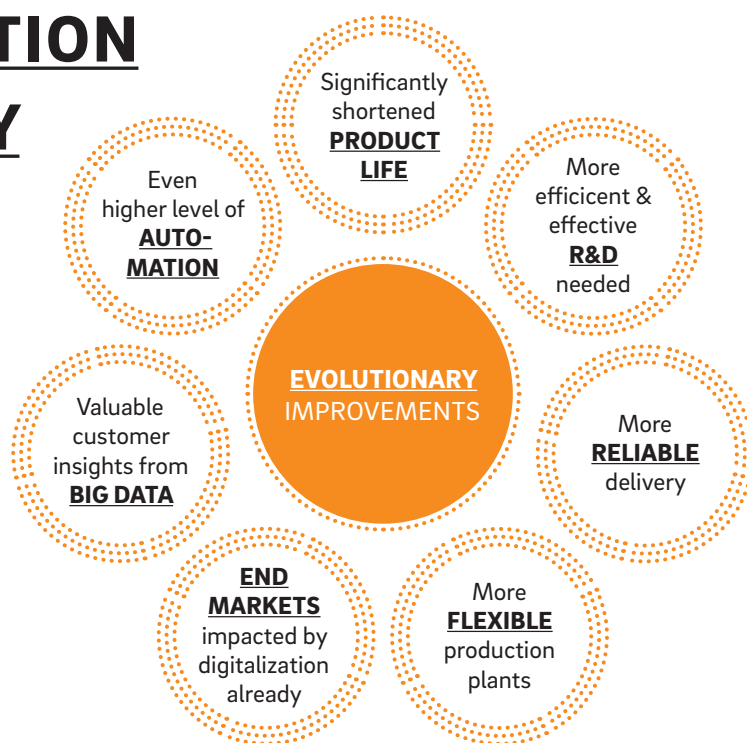
With the exception of some sectors (automotive for example where clients may prefer being supplied globally), the organization of the future may concentrate on selected hotspots, rather than having a comprehensive global presence. There will be open production sites ("makerspaces") and clusters. Firms will not necessarily have to sustain very large production sites to operate cost-efficiently. Sometimes it will be cheaper to transfer

B

MODERNIZATION

OF INDUSTRY

The modernization of industry, through efficiency improvement and digitalization, is changing the game of many industrial sectors. The so-called Industry 4.0 is also transforming the steel industry. Of all the issues facing players in the steel industry, going digital is the new long-term core measure to be undertaken at each level of their value chain – even though this is an evolutionary rather than a revolutionary improvement.



data and produce locally on a small scale. Organizations could be set up in a much more decentralized and flexible way with shared assets for instance.

The Light Footprint approach, can be a good driver towards establishing a more selective and agile footprint, by using three key pillars:

- Understanding the geographical shifts in demand and adapting to it by selecting priority areas;
- Relying increasingly on "win-win" rather than on "win-lose" competitive models;
- Transforming organizations into "living" organisms, which are dynamic and agile.

This light footprint strategy is already making an impact with by an increasing number of global joint ventures: ArcelorMittal and NSSMC entered a JV to acquire ThyssenKrupp USA in November 2013; Brazilian CSN entered a JV with an Asian steel consortium in December 2014.

Mini-mills using electric arc furnace technology can also be worth considering for generalist steelma-

ners keen to adopt a light footprint approach. Andy Harshaw, CEO of ArcelorMittal USA Flat Carbon acknowledges that: "Typically non-union, mini-mills have a labor cost advantage that includes more variable compensation and almost non-existent retiree obligations. Shorter lead times, geographic reach and flexible cost structure are huge factors in the increased share of production by mini-mills over integrated producers". U.S. Steel recently announced its plans to build a mini-mill furnace in Fairfield, Alabama to replace aging blast furnace technology.

Therefore, steel giants may have to consider whether maintaining presence in all segments is either creating or actually destroying value owing to the lack of scale effects or synergies between the various product ranges, and the increased competition from more agile and specialized players.

Steel industry should evolve radically to recover its profitability and provide an enhanced value proposition to its stakeholders and clients.

The cyclical effects affecting the steel industry are well known, traditional answers including consolidation and the restructuring of capacities, that have helped survive previous crises and generate benefit from post-crisis market recovery may not be sufficient to aid recovery this time. The recent drop in value of core players around the globe is evidence that the current business model and the economic environment may not be the right approach to a crisis far more structural than it appears.

Owing to the magnitude of global overcapacity, and thanks to the globalization of the market, slow growth and depressed prices are gnawing away at productivity and rendering the efficiency measures undertaken by many players worthless, including those generally accepted as being the most global or efficient in the market.

Therefore, new answers have to be developed along the three fundamental dimensions that we have been developing earlier: client intimacy, value adding services, and specialization before width of offering; increase of supply chain and commercial reactivity; regional selectivity before global presence.

Finding the right balance between product portfolio, segments and geographical reach, and reactivity of supply-chain, may be the central strategic equation that all steel makers and most notably the major players, should aim to solve in the near future.

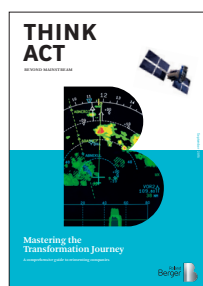
After decades of "going big", success this time round might depend on "going focused". ♦

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MASTERING THE TRANSFORMATION JOURNEY

A comprehensive guide to reinventing companies

The competitive business environment is faster and more aggressive today than ever before. This can be seen in the staying power of companies listed on the S&P 500 index: While in 1920 they used to average a 65-year stay on the index, today that figure has been slashed to ten years. In 2027 75% of today's S&P 500 companies will no longer be on the index. "New conditions and circumstances can erode a company's position in no time at all," says Dr. Tim Zimmermann, Senior Partner at Roland Berger.



FRENCH PLANTS GOING DIGITAL?

French Manufacturing Competitiveness Radar 2015/2016

In 2015, 82% of respondents consider themselves as competitive, but only 46% of respondents expect their competitiveness to improve in 2016. We are proud to present you the fourth edition of our survey on French plant competitiveness. The role of manufacturing in advanced economies is changing.

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