



Globalize or customize: finding the right balance

Global steel 2015–2016



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About the report

EY's *Global Steel 2015-16* report is an analysis of the global steel sector that assesses the risks and opportunities facing companies in the steel sector. It is the fifth consecutive annual report on the steel sector that EY has produced and is based in part on EY discussions with leading steel companies around the world. Steel companies that understand the risks and opportunities in the sector, and the potential impacts on their business, are better placed to respond to the current challenges in the sector.

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Anjani Agrawal
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“Several megatrends at the macroeconomic as well as sector level are driving the globalization of the steel business. The industry must embrace the challenge and transform itself for success.”

Executive summary

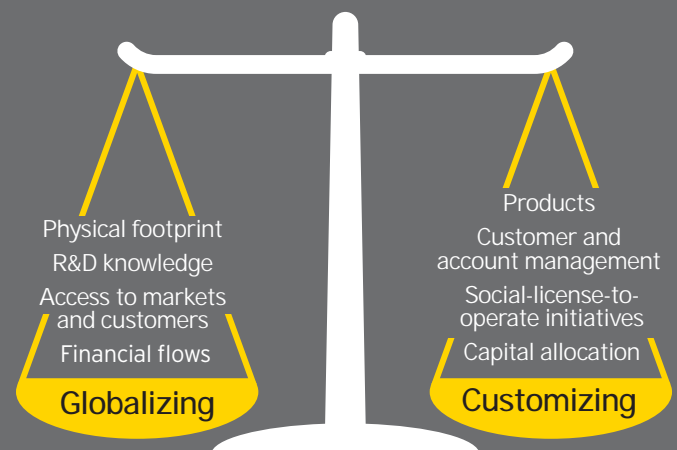
Steel – a sector being driven to transform

The outlook for the global economy is mostly positive with growth picking up in the US, India and Southeast Asia, while several emerging markets are experiencing a deceleration in growth. However, the structural shift in the transitioning Chinese economy could cap this momentum. Countries and businesses are becoming increasingly interdependent through trade, investment and financial systems across the world. Specific factors that are driving the globalization of the steel sector include surplus capacity, consolidation in supplier and customer segments, rising global trade flows, shifting cost curves across regions, volatility in currency, commodity prices and margins. On the other hand, socioeconomic factors influence policy responses in a national or domestic perspective. The risks and opportunities in the steel business are getting larger in scale and impact, with their sources becoming more diverse and global.

Real growth is in being a truly international player

To survive, and indeed thrive, in a sector in constant transition, steelmakers also need to transform themselves. Globalization is no longer a matter of choice; steel businesses' long-term success depends on it. The businesses that ride the next wave of growth will be those that understand the trends and refine their strategies, business models and portfolios according to a truly global mindset. The steel producers must find the right balance between globalization and customization.

Balance of real growth



Key transformation themes for the sector

In this paper, we outline four broad critical themes that steel companies need to focus on and start transforming now in order to become more competitive and succeed in this dynamic environment.

1. Rationalize excess capacity

Many steel-producing countries still see themselves as isolated or domestic markets, but that is no longer the reality. Low-cost excess capacity in one country is displacing production or sales in another, and this is providing incentives for governments to implement regional policies to protect the domestic steel sector or even encourage capacity addition.

The largest surplus capacity today is in China. The Chinese Government has awakened to the need to rationalize this excess capacity and is putting in place policy measures to deal with it. Initiatives include domestic consolidation and enforcement of environmental regulations. However, given the social implications of these initiatives, it will be a few years before the country achieves any meaningful capacity reduction.

While China deals with excess capacity, it's the perfect opportunity for non-Chinese steelmakers to remove inefficiencies and create economies of scale through consolidation. Steel players in the US and Europe have attempted to be in sync with the local demand. Governments can play a facilitating role by aligning their social security programs to alleviate the potential pain of capacity closure. Simultaneously, governments need to focus on making steel companies more globally competitive rather than providing support in the form of subsidies or temporary trade barriers. Investors and capital providers must adopt dynamic demand forecasting models and robust project appraisal processes. Then, they need to test the underlying assumptions that result from these models and processes even when the investment appears to be logical, purely in a national or regional context.

2. Increase market and product concentration

The global steel industry is relatively fragmented, with the market share of top 10 steel producers at 28% being very low in comparison with the automotive or seaborne iron ore markets. The industry went through intense consolidation from 1995 to 2005 in order to counteract the downturn. The inability of many in the sector to generate surplus cash or access capital has restrained further consolidation since the start of the most recent downturn. Synergies and market access have been the major motivations for steel deals, including selling off non-core assets, resulting in increased concentration in regional markets.

With the currently changing dynamics, steelmakers are focusing on innovative growth strategies, exploring how they can gain access to areas of increased demand, regardless of location. In areas with higher consolidation, e.g., the US, Japan and the EU, steelmakers have gained market power. In future, the biggest impact in the global steel market will be felt when giant Chinese steel businesses emerge post their domestic consolidation. Steelmakers will be seeking economies of scale, global synergies, expanded product portfolios and an extended value chain in response to globalization. With their end-use sectors increasingly operating from global platforms, steel suppliers will seek to follow their customers with specialized products to leverage R&D and extend products' life cycle. Recent capital raisings also show that global majors have been able to raise capital relatively easily and cost effectively. As the market concentration increases, steelmakers will then have pricing discipline, enhanced capacity utilization and improved market power with customers, suppliers and capital providers, thereby sustaining and growing profitably.

3. Increase market competitiveness

Global steel exports increased dramatically to reach record levels in 2014. The spread between Chinese steel prices and those in other regions further expanded, making imported steel attractive despite high freight costs and longer lead time. Other regional and currency issues have also made exports from several other countries like Russia cost competitive. However, using resources to deal with increasing trade is not a long-term solution. Instead, the best strategy will be for businesses to be more competitive, agile and innovative while maintaining cost competitiveness.

To achieve this, steelmakers are focusing on developing premium, value-added, niche downstream products for specialty sectors or applications. Leaders are collaborating with their customers in the early stage of product development, integrating R&D, manufacturing, sales and supply chains. The focus is also on after-sales support, performance-based service contracts and franchise developments where feasible. Reconfiguring the supply chain to make it efficient, while maintaining its agility and responsiveness to an ever-changing scenario, will be critical to becoming more competitive. Reliability of product delivery and quality is a baseline expectation. Servicing low-volume, high-value and high-variability products for small but profitable customers will also need to be supported by forecasting and aggregation tools, both for demand and capacity. All these must be technology-enabled by real-time collaboration and through an information sharing platform across all levels of the supply chain.

4. Embrace digital

Digital is already one of the defining megatrends now, but explosive growth has barely begun. Steelmakers must adopt digitalization to address the challenges they face and adapt to new models of working to develop differentiation, improve risk resilience, ensure sustainability and drive profitability.

To manage the myriad of external risks a steel business faces, a critical success factor will be a system that enables early capture of impending trends and faster analysis of scenarios and that generates options for decision-making. Use of predictive analytics to develop actionable insights and plan for the future can be vital in several functional areas, such as forecasting future demand and supply of steel or inputs, targeting and tapping into new markets, and meeting fluctuating customer demands. Automation and convergence of information technology with operational technology can allow integration of upstream, midstream and downstream to provide an accurate view of the supply chain. Business-to-business (B2B) integration also facilitates more efficient and effective communication with stakeholders. In addition, implementing reliable technology will improve end-to-end productivity and product quality. Some recent initiatives from steel players include launching and participating in online trading platforms to manage risks and create new offerings.

Global strategy, local execution

While the global outlook for steel is mildly positive as there are increasing signs of momentum in some parts of the world, there are still risks to global growth and a number of these evolve around China. There is no consensus on whether China has reached peak steel consumption. The persistent rise in urbanization will continue to boost steel demand. The pressure to preserve provincial employment and tax revenues will delay the overall capacity rationalization for years to come, while product mix undergoes change.

However, herein lies the opportunity. While the Chinese steel sector turns introspective over the next decade to deal with its excess capacity, pollution, low market concentration and lack of profitability, this is the window of opportunity to build competitive advantage now before supersized, more efficient Chinese steelmakers emerge in the global market.

Steel companies that embrace globalization (in their strategy, supply chains, knowledge and information, processes, talent and financial flows) while balancing with customization (of their products, marketing, stakeholder relationships) will emerge as sector leaders in the long term.

Steel in the global economy

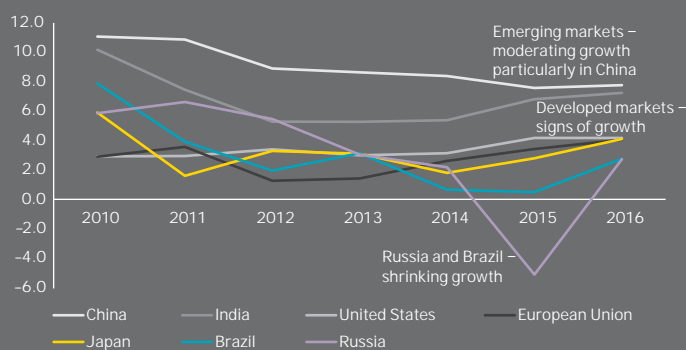
Global economy shows increasing signs of momentum

The outlook for the global economy is positive with a 3.3% growth forecast in 2015 and 3.9% in 2016.¹ There are increasing signs of momentum, particularly in the US. However, there are also some risks to global growth, particularly from China's transition to more balanced economic growth.

The US is witnessing firm economic recovery, with strong employment growth and a recovering housing market. Growth in the EU is slow but appears to have gathered momentum since the fourth quarter of 2014. While Japan's GDP contracted slightly in 2014, monetary easing, a boost from lower oil prices and improving trade with the US in light of a weaker yen, will all see growth pick up during 2015-16.

In emerging markets, China's economic growth is easing as the Government pushes forward with its reform agenda. The International Monetary Fund (IMF) predicts the Chinese economy to slow down further from 7.8% in 2013 to 6.3% in 2016.² In addition, the slowing manufacturing sector in China may raise concerns about global deflation, and this could be detrimental to both the global economy and the global steel sector.³ India continues to grow steadily owing to lower inflation and a reduction in interest rates. In Brazil and Russia, on the other hand, growth continues to shrink in the face of economic and political headwinds.

GDP outlook for major steelmaking regions



Source: Oxford Economics, EY analysis

1. Oxford Economics, accessed on 7 May 2015.

2. "World economic outlook: uneven growth – short- and long-term factors," *International Monetary Fund*, April 2015.

3. "China's 'most polluted' now a shining example," *China Daily*, 12 March 2015.



"In China, a slowing domestic real estate market remains the biggest downside risk for steel."

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The monthly survey of HSBC/Markit Purchasing Managers' Index (PMI) clearly shows how patchy industrial growth is, particularly in emerging markets.

The PMI shows contraction across emerging markets (with the exception of India).

	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15	Feb 15	Mar 15	Apr 15	May 15
China	49	48.5	48	48.1	49.4	50.7	51.7	50.2	50.2	50.4	50.0	49.6	49.8	50.7	49.6	48.9	49.2
Brazil	50	50.8	50.4	49.3	48.8	48.7	49.1	50.2	49.3	49.1	48.7	50.2	50.7	49.6	46.2	46	45.9
India	49	52.5	51.3	51.3	51.4	51.5	53	52.4	51.0	51.6	53.3	54.5	52.9	51.2	52.1	51.3	52.6
Indonesia	51	50.5	50.1	51.1	52.4	52.7	52.7	49.5	50.7	49.2	48.0	47.6	48.5	47.5	46.4	46.7	47.1
Russia	48	48.5	48.3	48.5	48.9	49.1	51.9	51	50.4	50.3	51.7	48.9	47.6	49.7	48.1	48.9	47.6
US	56	57.1	55.5	55.4	56.2	57.3	55.8	58	57.5	56.2	54.8	53.9	53.7	55.1	55.7	54.1	54
Eurozone	53	53.2	53	53.4	52.2	51.8	51.9	50.7	50.3	50.6	50.1	50.6	51.0	51.1	52.2	52	52.2
Japan	56	55.5	53.9	49.4	49.9	51.1	50.5	52.4	51.7	52.4	52.0	52.0	52.2	51.6	50.3	49.9	50.9

■ Expansion ■ Contraction ■ No change

Source: Markit Economics via Factiva, EY analysis
Note: Anything below 50 shows contraction.

While the outlook for 2015 is largely positive, there are challenges in the form of weak global trade, lower oil prices and the possibility of an interest rate hike in the US.⁴ After growing by an estimated 3.4% in 2014, the global economy is expected to expand by 3.5% and 3.8% in 2015 and 2016, respectively. Developing countries are expected to keep adding to global growth by growing 4.3% and 4.8% in 2015 and 2016, respectively, compared with 4.6% growth in 2014.⁵

4. "Global Economic Prospects to Improve in 2015, But Divergent Trends Pose Downside Risks," *World Bank*, 12 March 2015.

5. "World economic outlook: uneven growth – short- and long-term factors," *International Monetary Fund*, April 2015.

Global steel demand has slowed on the deceleration of China's economy

Global apparent steel consumption growth slowed significantly to 0.6% y-o-y to 1.65 billion tonnes in 2014 compared with 6% growth in 2013.⁶ The global consumption of steel will continue to grow, albeit at a slower rate due to both lower Chinese steel demand and a substantial decline in demand from energy sectors. The World Steel Association forecasts a 0.5% growth in global steel consumption to 1,544mt in 2015.

Chinese steel demand predicted to decline in 2015 and 2016

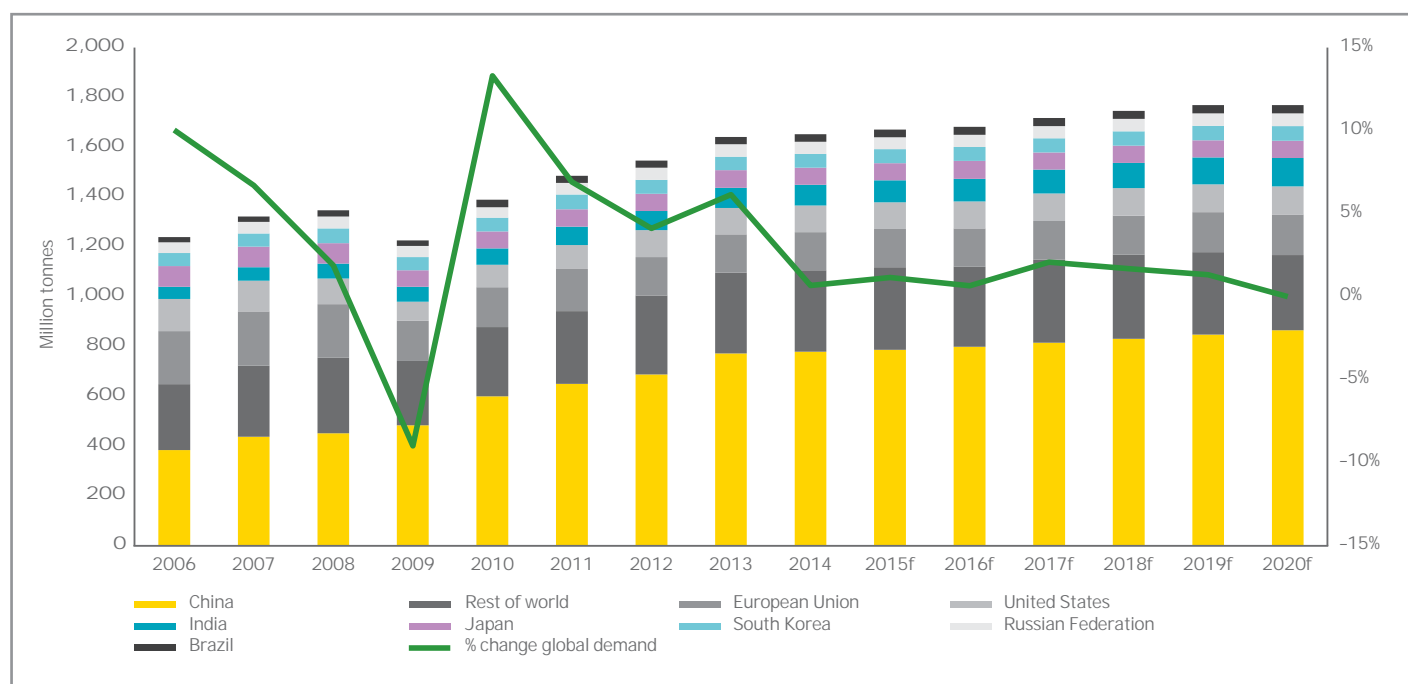
China has traditionally been a driver of strong global steel demand growth; but in 2014, Chinese domestic steel demand registered a 3.4% y-o-y decline for the first time since 1996.⁷ Chinese steel demand is predicted to decline even

further by 0.5% in both 2015 and 2016.⁸ In the first quarter, there has already been a significant slowdown in demand, down 6% y-o-y and this is largely due to the fact that the real estate market, which directly influences steel demand, remains weak in China.⁹

A slowing domestic real estate market remains the biggest downside risk for steel despite a recent easing of mortgage restrictions. This risk is a significant one given an estimated 30% of Chinese steel production goes into the property market.¹⁰ While there is still growth in total property investment, there has been a significant decline in the sales of residential property. In 2014, residential sales declined 9% y-o-y and have continued to decline in the first quarter of 2015, down 9.8% y-o-y.¹¹

For some time, there has been the expectation that Chinese steel supply and demand would peak in around 2025. With significantly lower Chinese steel demand in 2014, there are concerns that China has reached "peak steel" much sooner than expected.¹² The Chinese Government is pushing through its economic reform program to move from a model of centrally planned investment, relying on the metals sector as a driver of economic growth, to a new model of sustainable growth based on consumer demand.

Global steel consumption 2006–2020



Source: *Resources and energy quarterly*, Australian Chief Economist

6. "Resources and energy quarterly," *Office of the Chief Economist*, March 2015.

7. "China's annual steel consumption drops for first time in three decades," *Reuters*, 12 March 2015.

8. "Worldsteel short range outlook 2015-2016," *worldsteel*, 20 April 2015.

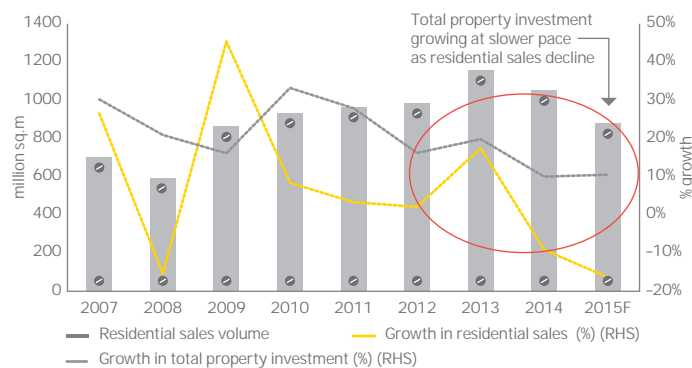
9. "Steel sector Q&A (no.1): will signs of output cuts mark the start of an upturn of an upturn in steel product prices," *UBS*, 16 April 2015.

10. "Chinese property's long commodity shadow," *MiningNewsPremium.net*, 2 October 2014.

11. "National real estate development and sales in the first three months of 2015," *National Bureau of Statistics of China*, 15 April 2015.

12. "Concerns raised as China steel enters 'peak zone,'" *Financial Times*, 17 February 2015.

Trends in the Chinese property sector are an important determinant of steel demand



Source: China National Bureau of Statistics, BNP Paribas estimate, and EY analysis

As a result, we may well see metal demand peak and stabilize at a slightly lower level than expected but we don't think China has reached peak steel yet.¹³ Li Xinchuang, Executive Vice Secretary-General, China Iron & Steel Association (CISA), has indicated that China's steel consumption would peak at 740mt in 2017.¹⁴

Strong automotive demand and recovery in nonresidential construction in the US, but weaker demand from energy-related sectors

In the US, steel demand picked up in 2014 owing to strong growth in the automotive sector and thanks to the beginning of recovery in nonresidential construction. However, lower oil prices will mean less capital expenditure in the oil exploration sector, and as a result, steel pipe and tube producers supplying the oil market will see lower sales volumes.¹⁵ US steelmakers with exposure to the energy market have already reduced production in response to weaker demand.

However, worldsteel predicts a contraction of 0.4% in US apparent steel use during 2015. This is in stark contrast with broker forecasts for 2015 which predicted a 2% to 4% growth in apparent steel consumption. It would seem, however, that while growing demand from the improving construction sector and steady demand from automotive all point to overall growth in underlying US steel demand, destocking will result in an overall reduction in US steel demand.¹⁶ The energy sector demand for steel, which accounts for only 10% of total US steel demand, will be weaker in 2015 on lower oil and gas demand.¹⁷

13. "Commodities weekly: Economic research," *Natixis*, 12 February 2015.

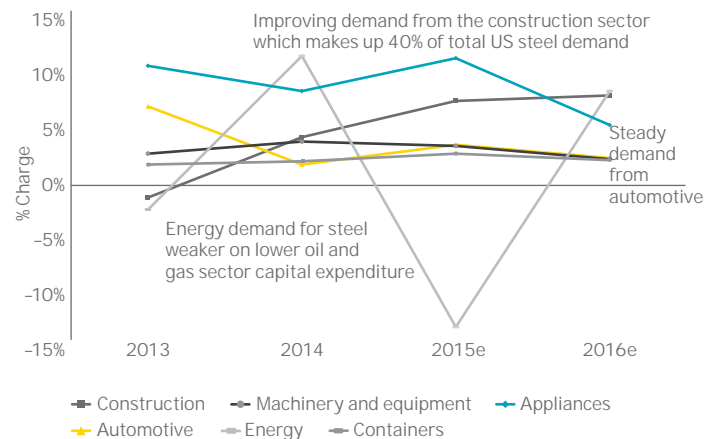
14. "China's peak steel intensity is in sight," *Platts RM Monthly India focus*, December 2014

15. "Steel price decline a "bump in the road" as US steel cycle is intact; STLD remains the best idea," *Morgan Stanley*, 23 February 2015.

16. "Metals & Mining Call: steel prices find firmer footing," *Morgan Stanley*, 10 May 2015

17. "Steel price decline a "bump in the road" as US steel cycle is intact; STLD remains the best idea," *Morgan Stanley*, 23 February 2015.

US steel demand

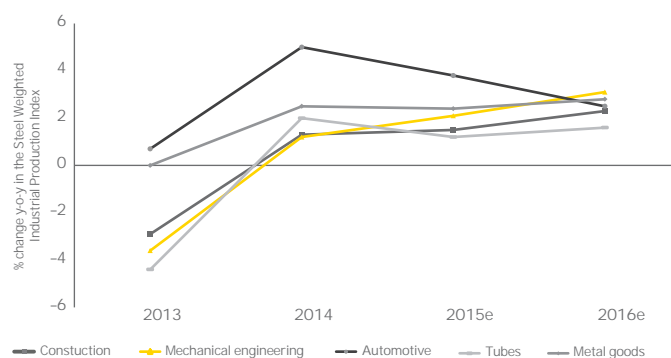


Source: Morgan Stanley, EY analysis

Gradual recovery in EU steel demand

Steel demand in the EU is expected to recover gradually over the next year. Steel markets in Germany and the UK are likely to benefit from improving residential property investment, along with low interest rates. Increasing growth in the automotive industry will also support steel demand, although at a more moderate rate compared to 2014.¹⁸ In addition, depreciation of the euro and declining energy costs will help improve the import-export balance and stimulate local demand. EU steel consumption is forecast to increase by 1.2% a year to 163mt in 2020.¹⁹

Moderate growth is expected in EU steel-consuming sectors



Source: EUROFER, February 2015

18. "Economic and Steel Market Outlook 2015-2016," *EUROFER*, 6 February 2015.

19. "Resources and energy quarterly," *Office of the Chief Economist*, March 2015.

Global steel production is slowing as producers seek to rein in excess supply

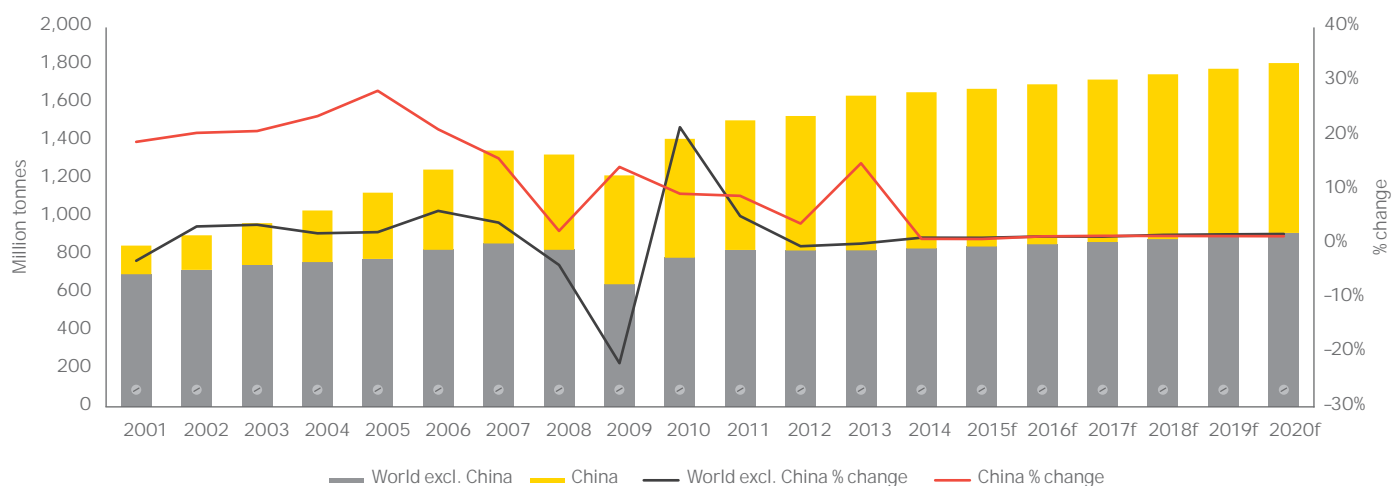
Steel production growth slowed to 1.2% y-o-y in 2014, but in light of weak demand growth, only reduced production will help to deal with the continued oversupply of steel. Several regions did see decreased production, including Turkey, Brazil and Ukraine. Compared with previous years, China's growth in production was fairly modest at 0.9% y-o-y and reached 822.7mt in 2014.²⁰

Chinese steel production is down by 1.4% in the first quarter of 2015.²¹ CISA Executive Vice Secretary-General, Li Xinchuang, has stated that steel production in China will continue to decline

over the next 15 years in line with his estimates of declining steel demand. He estimates that in 2030 Chinese steel demand will be approximately 567mt from about 700mt in 2014.²²

There will have to be increased closure of outdated, polluting and unprofitable steel capacity if this is to occur. China's reform program includes new environmental standards, new rules on debt issues by provincial governments, and reform measures to be implemented for state-owned enterprises.²³ These measures are all being implemented to reduce obsolete capacity, prevent steelmakers from adding further capacity, and ultimately increase the efficiency of the steel sector. The effectiveness of these measures will be an important determining factor for the global steel sector in 2015. However, while steel production growth is flattening, it has not yet peaked; CISA has forecast an increase in production to 837mt in 2015.²⁴

Global steel production



Source: *Resources and energy quarterly*; Australian Chief Economist

20. World Steel Association, 'World-crude steel output increases by 1.2 in 2014, 12 March 2015.

21. "Steel sector Q&A (no.1): will signs of output cuts mark the start of an upturn of an upturn in steel product prices," *UBS*, 16 April 2015.

22. Carbon steel: China appears ready to adjust steel policy," *KeyBanc Capital Markets Inc.*, 15 March 2015.

23. Ibid.

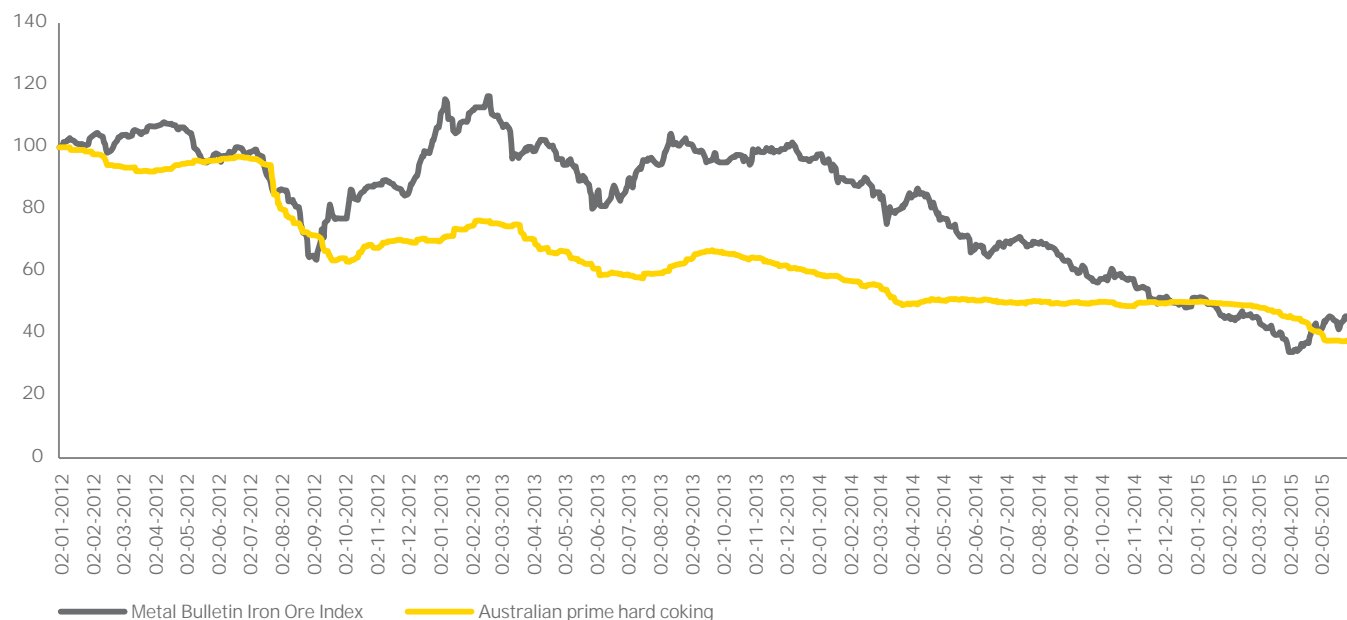
24. "Has China's steel juggernaut run out of road: Andy Home", *Reuters*, 19 February 2015

Lower domestic demand in China and the depreciation of the Russian ruble led to an increase in exports from both countries in 2014. Therefore, there is a significant pressure on global steel prices and intensified trade protectionist activity has arisen as regional steelmakers seek to protect their domestic markets. This oversupply is also putting pressure on capacity utilization and most plants continue to run at rates below 80%. Much of the blame for the oversupply is being put on Chinese steel producers, although they are often displacing higher cost, less efficient production elsewhere in the world. Through the reform program mentioned above, China is trying to close down its obsolete excess capacity but only removed 31.1mt in 2014.²⁵

Steel prices are lower as raw material prices decline and demand in China weakens

In 2014, raw material prices fell significantly on increased iron ore and coking coal production and weaker steel demand. Iron ore prices declined by 47% to an average price of US\$88 (FOB) in 2014, and as low as US\$47/tonne in early 2015. Similarly the third quarter have been settled at \$93/t for premium coal, down 15% from the previous quarter.²⁶

Iron ore and coking coal prices (rebased 100 at Jan 2012)



Source: Thomson Datastream, McCloskey, EY analysis

Continued oversupply in the iron ore market, due to significant production expansion in Brazil and Australia, is expected to keep iron ore prices subdued in 2015/16. However, hard coking prices stabilized in the second half of 2014 as high-cost mines have closed. If this trend continues, the supply of coking coal might begin to tighten up in 2016 with increasing demand coming from India and other growing steel-producing nations.²⁷

Dynamic shift in steel margins

The hypothesis of our 2013 and 2014 global steel reports was that vertically integrated steelmakers consider selling coal and iron ore assets to reduce debt and undertake alternative raw material hedging. If that hypothesis had been followed assets could have been sold at their peak valuations and impairments would have been avoided. The lower debt loads would have enabled these steelmakers to be the senior partners in future consolidation and globalization.

25. "China steelmaking capacity cut by 31.1 million tonnes in 2014," *American Metal Market*, 5 February 2015

26. UPDATE 1-Australia quarterly coking coal contract with Japan falls 15 pct, *Reuters News*, 18 June 2015.

27. "Main steel raw materials monitor," *UBS*, March 2015.

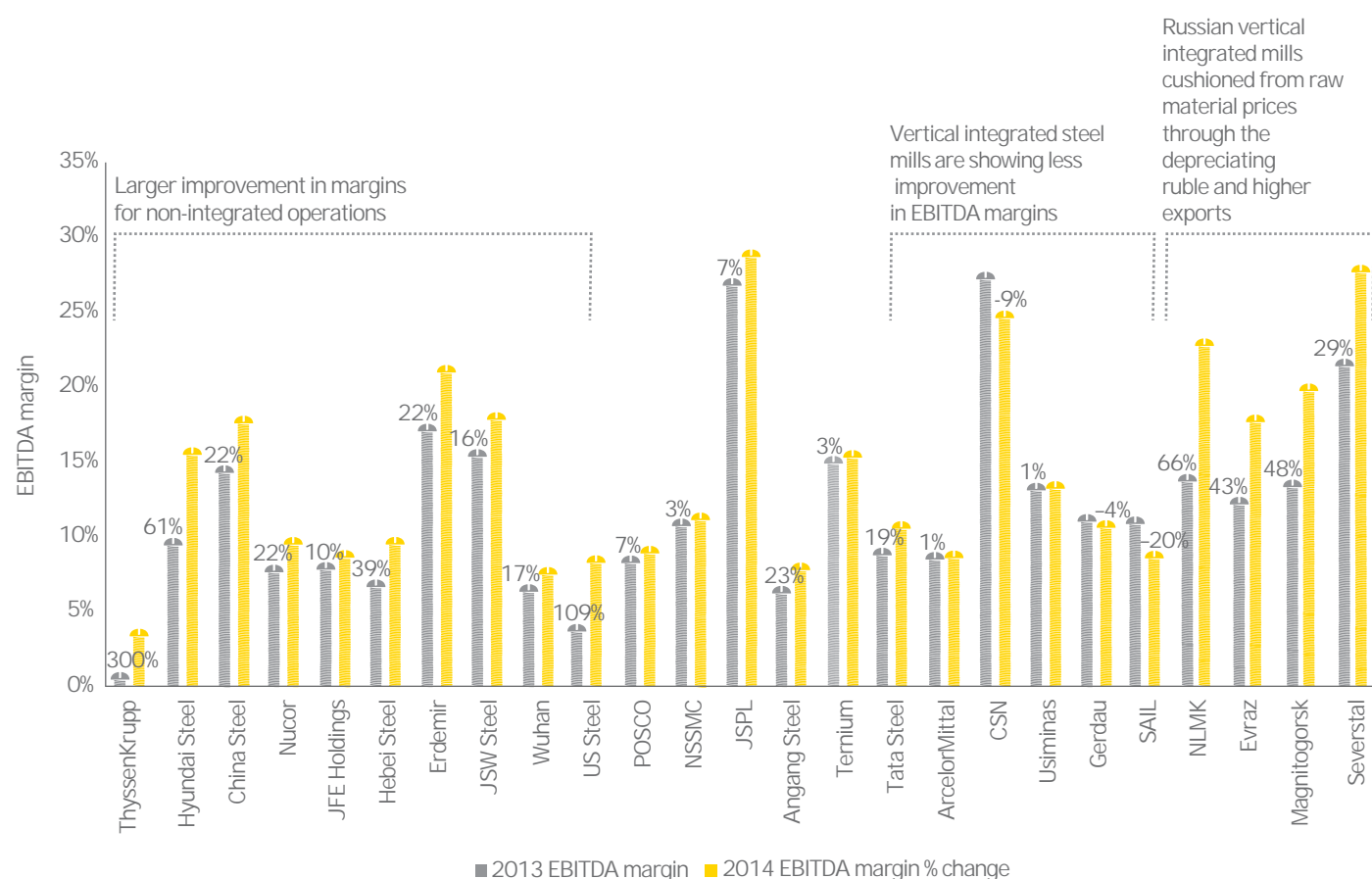
In our *Global Steel 2014* report, we noted that many steelmakers had responded to the challenge of raw materials security and margin volatility by making acquisitions or investing upstream to access raw material resources on a long-term basis. The recent decline in raw material prices has, however, changed the dynamics of the steel industry. The gap between the profit margins of those players with less integration of raw materials and the vertically integrated players has reduced. Steelmakers dependent on third parties for raw materials supply were able to protect, and even expand their margins as the price correction in raw materials was much steeper than steel product prices.

However, the benefits accrued have varied across steelmakers depending on the quality of raw material used, production process and plant location. Low-quality raw material witnessed a steeper decline in prices, which benefitted those companies

that operate blast furnaces with a higher mix of low-grade ores. On the contrary, scrap prices were comparatively resilient keeping costs up for Electric Arc Furnace (EAF) steel producers. Currency realignment also played a major role in global cost competitiveness during 2014. The decline in the US dollar-denominated raw material prices and depreciating domestic currencies helped some steelmakers, e.g., in Russia and Japan, to reduce their overall cash cost.

Overall, however, less integrated players performed better than integrated players. A comparison below reveals that less integrated players like POSCO and Nippon Steel & Sumitomo Metal Corporation performed better than integrated players such as ArcelorMittal in 2014 compared with 2013. Russian integrated mills were, however, cushioned from lower raw material prices through the depreciating Ruble and higher exports.

EBITDA margins improve for less integrated players with the exception of Russian producers



Source: Capital IQ, EY analysis

Steel producers have become increasingly cautious about unprecedented volatility in raw material prices and this is likely to continue. It is, therefore, essential for steel companies to effectively manage raw material inputs to ensure the impacts of volatility are limited during the period from raw material purchases to ultimate sale to customers.

Raw material strategies being adopted by steel makers

Hedging: Steel companies are becoming more active in hedging of input materials. Since their launch in 2009, iron ore derivatives have been continuously gaining traction, and their volumes have almost doubled since then, reaching about 550mt in 2014. Declining iron ore prices are expected to further increase the use of iron ore derivatives to about 1 billion tonnes. ArcelorMittal has already started trading iron ore swaps and Tata Steel has also decided to hedge its iron ore procurement risk. The entry of these large players may set a trend which smaller steel companies are likely to follow.²⁸

Spot buying: As new volumes of iron ore is hitting markets, steel companies have changed their buying habits. Mills no longer worry about seasonal restocking, as companies are aware that they can access material as per requirement. During 2014, iron ore stocks at the ports in China remained comfortably above 100mt, and iron ore spot trades witnessed a significant rise in the second half of 2014 in comparison to 2012 and 2013.²⁹

Vertical integration: Vertical integration of mining operations is a conventional method of securing raw materials for long-term operations. However, being a long-term strategy, it may be costly to unwind. Regional competition, capital investment, maturity of industry and transaction cost are some of the factors considered while forming a raw material strategy. Accordingly, there are a range of strategies steel companies are taking up, e.g., AK Steel acquired Dearborn, an integrated steel plant, as it fits into the overall strategy of the company to move toward raw material sufficiency; Tata Steel, on the other hand, decided not to make any further investment and is considering selling its 35% stake in the Benga coal project.³⁰

Steel product pricing: Steelmakers are changing their strategies around fixing steel product prices. Most companies have been reviewing product prices either on monthly or fortnightly basis but now companies are thinking of reviewing it daily. For instance, JSW Steel in India has started a daily review of product prices for long products. The company believes that in the current dynamic market, it does not make sense to review prices once and hold them for a certain period of time. This strategy is particularly useful where raw materials witness very high price volatility in a very short period of time.³¹

28. "ArcelorMittal, Tata Steel to start hedging iron ore," *Reuters*, 12 December 2014.
29. "Steel raw material monthly," *Platts*, January 2015.

30. "Tata Steel to cash out of Mozambique asset," *Live mint*, February 2015.
31. "JSW Steel switches to daily pricing for long products," *Business Standard*, 8 April 2015.



Pressure to globalize – a sector in transformation

Globalization defines the business landscape

Globalization continues to define the business landscape and as a result the economies of the world will remain highly interdependent through trade, investment and financial system linkages. This will drive the need for stronger global policy coordination among nations and resilient supply chains for companies operating in this environment.

At the same time, domestic interests will continue to clash and compete with the forces of global integration. Pushback and opposition to global integration manifests itself in various economic, political and cultural forms, including trade and currency protectionism, the imposition of sanctions to achieve political aims, anti-globalization protests, as well as the strengthening of nationalistic, religious and ethnic movements around the world.

Prospering in this globally integrated environment requires constant refinement of global business strategies. The businesses that will ride the next wave of growth will be those that understand the significance of globalization and tailor their strategies based on that understanding. They will explore new markets and establish well-rounded global business portfolios.

The pressure on the steel sector to globalize is evident in the following specific challenges being faced by the sector:

- Excess capacity
- Customers, financiers and suppliers of the sector becoming increasingly globalized
- Low market concentration leading to increased competition
- Global demand for universal products leading to increased trade flows
- Increasing multilateral trade agreements
- Increasing use of trade protectionist measures
- Increased competition in what have been isolated markets
- Imbalance between resource availability and finished product demand in most markets
- Vibrant emerging markets and multi-speed regional growth
- Shifts in global competitiveness of the steel sector
- Regulation driving resource availability, technology, product mix, costs and margins
- Risks and opportunities becoming more diversified and often global in their sources or impact
- Increased volatility, uncertainty, complexity and ambiguity

The challenges for the steel industry are diverse and complex. The risks and opportunities are getting larger in scale and impact. The sources of external drivers and their influences are also increasingly global and diverse. In such environment, there are imperatives for the industry to globalize. By embracing the opportunities presented by globalization, the steel industry can move towards a far more efficient, competitive and profitable business.

This entails transformation of the business strategy, people, processes and technology. There are some globalized players in the steel industry who are adopting new approaches to address this challenge, while many others are yet to adapt well and fully leverage the opportunity. Several of these steps need to be implemented by stakeholders of the industry in the interest of overall economic growth



Lee Downham
Global Mining & Metals Transactions Leader
EY, United Kingdom

“Rationalization of excess capacity and an associated period of increased consolidation will be necessary to bring back efficiency and profitability to the sector.”

Drivers of globalization

This graphic highlights some of the drivers of globalization that are putting increasing pressure on the steel sector.



In particular, rationalization of excess capacity and an associated period of increased consolidation will be necessary to bring back efficiency and profitability to the sector. Excess capacity, particularly in China, is by far the biggest challenge facing the sector. The Chinese Government is rethinking its plans to restructure its steel sector and, as a result, is providing new targets to be met by 2025. While the Chinese steel sector remains introspective over the next decade to deal with its excess capacity, pollution, low market concentration and lack of profitability, non-Chinese steelmakers have a small window of opportunity to build competitive advantage before supersized, efficient Chinese steelmakers emerge in the global market. To make the most of this window of opportunity, the sector will need to go through a

significant period of restructuring. By embracing the opportunities presented by globalization, the steel industry can transform itself into a far more profitable, efficient and competitive sector able to link with the global supply chains of its suppliers and customers.

There are four key areas of transformation discussed in this paper, including:

1. Rationalize excess capacity
2. Increase market and product concentration
3. Increase market competitiveness
4. Embrace digital



Pierre Mangers
Executive Director
EY, Luxembourg

"Investment in new steel projects continues despite slowing demand growth, currency fluctuations and falling steel prices."

Rationalize excess capacity

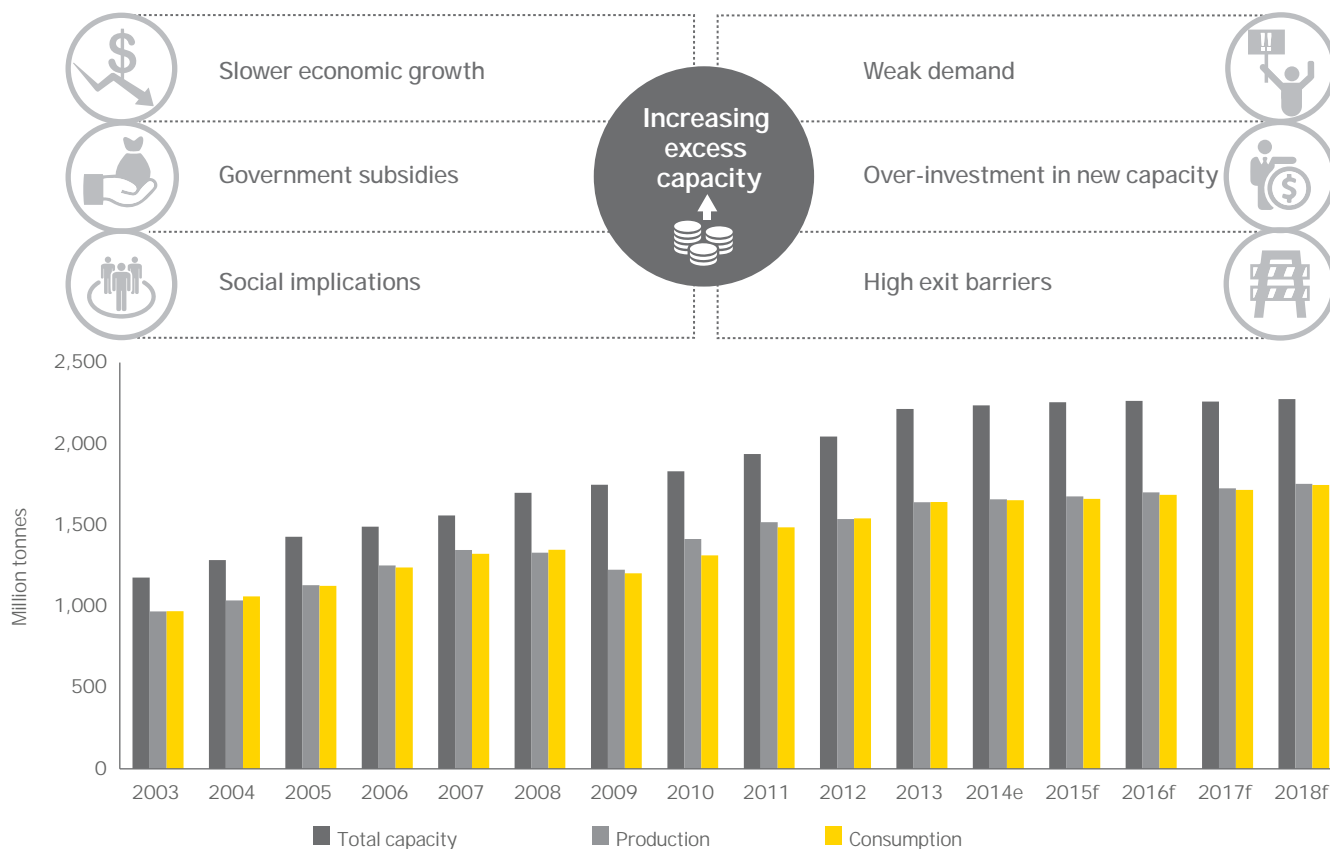
Many steel-producing countries see themselves as isolated or domestic markets, but it is clear that the steel industry is becoming more global and under pressure to globalize further. Low cost excess capacity in one location is displacing production (or sales) in another and this provides the incentives for governments to intervene with regional policies to subsidize or protect the domestic steel sector through duties on imported steel or anti-dumping actions. In addition, investment in new steel projects continues despite slowing demand growth, currency fluctuations and falling steel prices.

Global steel-producing capacity has significantly increased over the last decade. In 2014, there was a significant gap between global crude steel demand at 1.65 billion tonnes and global steelmaking capacity of 2.24 billion tonnes. Recent data from

the CISA indicates that this gap may be even greater with excess capacity in China being alone estimated at 427mt.³² Nevertheless, global steelmaking capacity continues to expand and the OECD has projected an increase of 5.4% in the world's nominal steelmaking capacity by 2017.³³

The largest amount of excess capacity is in China. The Chinese Government recently released a draft Steel Industry Adjustment Policy (2015 Revision) with the explicit goal of moving the Chinese steel industry toward a new economic model in which the market plays a decisive role in resource allocation. One of the main aims of this policy is to deal with the large amounts of excess Chinese steelmaking capacity. In addition, the new policy aims to reduce excess capacity and achieve 80% capacity utilization by 2017. In order to achieve this, the Chinese steel sector would have to close down 112.5mt of capacity per year and steel production would have to remain unchanged.³⁴ On current estimates of steel capacity in China, capacity utilization is below 70%.³²

Reasons for global excess capacity



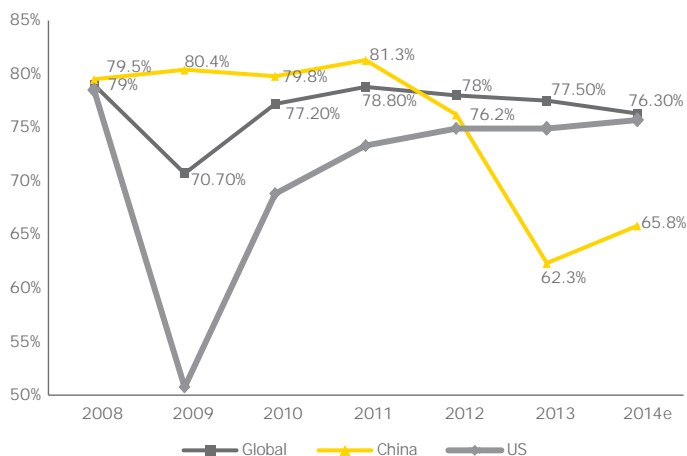
Source: EY analysis

32. "Status and outlook: Chinese iron and steel market," *Presentation to the Global Iron Ore & Steel Forecast Conference by Li Xinchuang, Metallurgical Planning and Research Institute*, March 2015.

33. "Excess Capacity in the Global Steel Industry and the Implications of New Investment Projects," *OECD Science, Technology and Industry Policy Papers No. 18*, OECD Publishing, February 2015.

34. "Comments on China's Steel Industry Adjustment Policy (2015 Revision)," *Steel Associations of North America, Latin America and Europe*, 20 April 2015, accessed via steelnet.org/new/20150420.pdf

Global and Chinese capacity utilization



Source: China's Metallurgical Industry & Planning Institute; worldsteel, Deutsche Bank, EY analysis

While the Chinese Government states that peak steel demand has been reached, it is our view that there is too much capacity to remove over two years to meet utilization targets. In addition, the policy gives Chinese steelmakers more time to consolidate the domestic sector with targets to achieve 60% of market share in the top 10 mega steel companies delayed to 2025. So while some capacity will be removed, it is likely that steel production will continue to increase, although perhaps not to the full extent forecast by major iron ore producers. The major iron ore producers are forecasting peak steel production at more than 1 billion tonnes in the mid-2020s and a plateau through to 2030.³⁵

A precursor to this new Chinese sector plan is the introduction of new environmental regulations and the removal of the rebate on boron steel exports from 1 January 2015. These new measures, in tandem with the removal of some financial support to steel mills, will result in the removal of some Chinese steel production capacity.³⁶ There are already reports of noncompliant steel production capacity being shut down, e.g., all the production in Linyi has closed with no indication of when it will restart if at all. Crude capacity in Linyi is estimated at 7mt to 8mt.³⁷ While Chinese steel exports increased 40.7% y-o-y compared with the first quarter of 2014, steel exports have been declining month on month from 10.29mt in January, to 7.8mt in February and down to 7.6mt in March. This is largely due to the effect of the removal of the rebate on exports of boron-added steel.³⁸

Many steelmakers outside of China deal with excess capacity by managing utilization to match demand. In 2014, global capacity utilization was at a four-year low demonstrating discipline as

steelmakers cut production to respond to weaker demand. In the US, steelmakers have been proactive in responding to both falling oil prices and possible oversupply. It is estimated that 14.4% of slab capacity in the US has been idled in 2015 and capacity utilization was at around 69% in the US in the first quarter.³⁹

While there was a temporary closure of capacity in the EU after the global financial crisis, permanent capacity closure since 2009 has only been around 5%.⁴⁰ There is little new capacity being added in the EU and according to the OECD by 2017 there will be 231.6mt of steelmaking capacity compared to 233.6mt in 2013.⁴¹ European steel plants are running at lower capacity utilization and the European Commission is trying to implement stricter anti-dumping measures, especially against Chinese and Russian steel.

While China deals with the problem of domestic excess capacity and a fragmented local sector, it's the perfect opportunity for non-Chinese steelmakers to capitalize on this to remove inefficiencies, create economies of scale through consolidation and globalization and enhance productivity. Governments also have a larger role to play in curbing steel overcapacity across nations. Their social security programs need to be aligned to alleviate the potential pain due to closure of capacities. While forming policies, Governments need to focus on making steel companies globally competitive rather than providing support in form of subsidies or temporary trade barriers. Investors and providers of capital must also adopt robust project appraisal processes and test the underlying assumptions.

Dealing with excess capacity

- ▶ Governments' intervention should be limited to allowing market forces to work properly, charging market-based costs for natural resources, removing market-distorting policies like subsidies.
- ▶ Steel companies have to factor in the current global excess capacity into strategic planning – even if they are 'national' or regional players.
- ▶ Industry disclosures and project appraisal processes need to be improved for investors to challenge new investments.
- ▶ More steel-intensive structures can be promoted in the construction industry to enhance the longevity of infrastructure.
- ▶ Steelmakers (private and state-owned) need to be encouraged to consolidate.
- ▶ Supply-demand forecasting needs to be embedded when making capex decisions even in countries with high-growth demand.
- ▶ Evaluation of global trends of demographics, energy developments, manufacturing competitiveness, resources and technology for assessing steel demand across the geographic regions to prevent stranded capacity being built.
- ▶ Provide socio-economic support, including training and foster alternative sector development for easing the pain of steel capacity closure.
- ▶ Environmental industry standards can be raised to encourage the closure of outdated and polluting capacity.

35. "Safely delivering exceptional returns," *Presentation to the Global Iron & Steel Forecasting Conference by Jimmy Wilson, President Iron Ore, BHP Billiton*, March 2015.

36. "Status and outlook: Chinese steel & iron ore market," *Presentation to the Global Iron & Steel Forecasting Conference by Li Xinchuang, Metallurgical Industry Planning and Research Institute*, Perth, March 2015.

37. "Local authorities shut steel mills in pollution fight," *Shenzhen Daily*, 6 March 2015.

38. "Second Information Conference 2015 press release," *China Iron and Steel Association*, 29 April 2015, accessed and translated from chinaisa.org.cn/gxportal/DispatchAction.do?efFormName=ECTM40&key=C2gKNV41AGEEZQE2VDMEZQJmVzcBZQQyVWMGNwBmATMFFglGARoAMacWUBcDFABi

39. "Steel prices searching for bottom as mills move proactively on supply," *Morgan Stanley*, 2 April 2015

40. "Europe step up fight over cheap steel imports," *Financial Times*, May 2015

41. "Excess Capacity in the Global Steel Industry and the Implications of New Investment Projects," OECD, January 2015



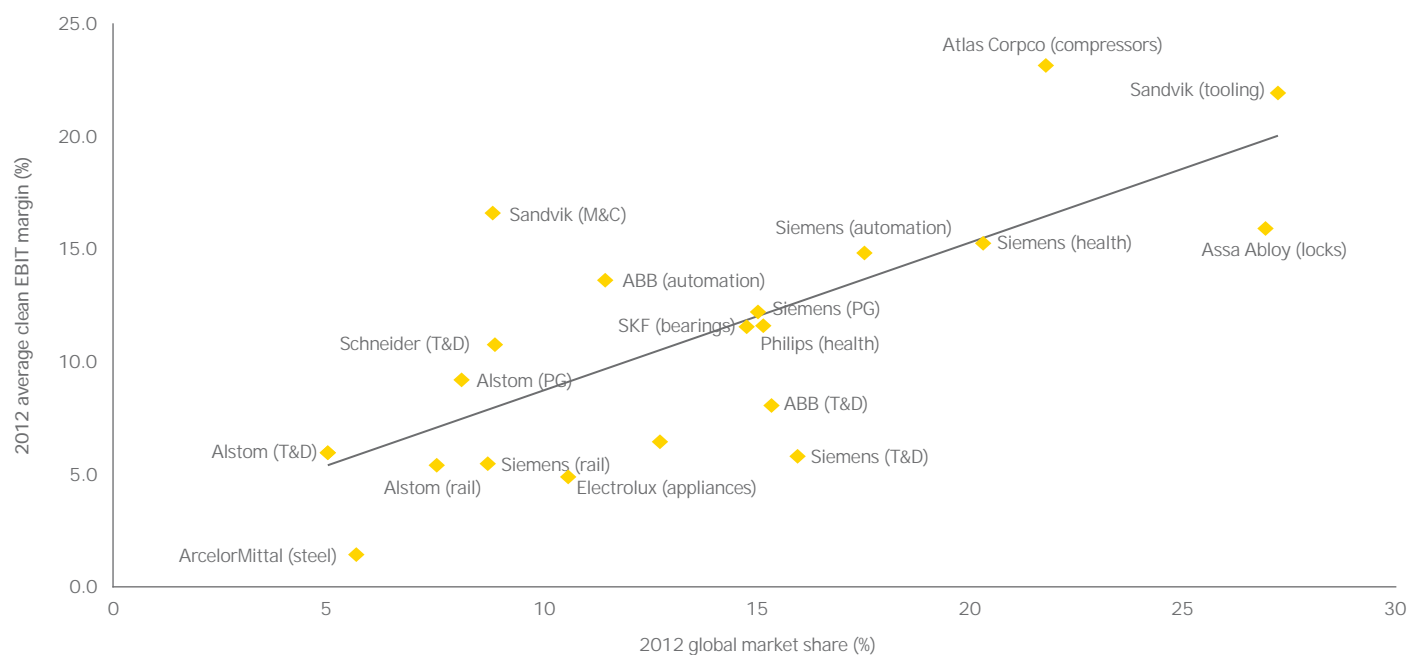
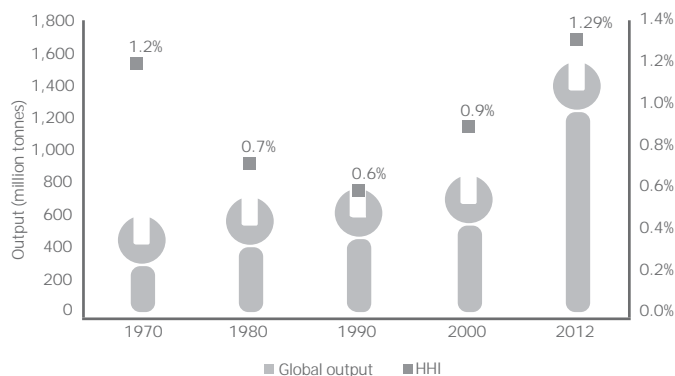
Bob Stall
Partner
EY, United States

"Several steelmakers are already focusing on growth strategies, looking at how they can expand to gain access to areas of increased demand, regardless of location."

Increase market and product concentration

The global steel industry has weak market concentration and excessive government (non-market) intervention. This has resulted in inefficient investment allocation and unsustainable returns. The Herfindahl-Hirschman Index (HHI) is a measure of market share concentration in an industry, and a higher HHI represents a more concentrated industry with businesses that have greater market power. A study by Redburn, an independent equities broker, showed that the steel sector was virtually unchanged from 1970. In addition, the study demonstrated through analysis of a number of sectors that there is a clear correlation between market share and profitability.

Steel market concentration and profitability



Source: Redburn, April 2014

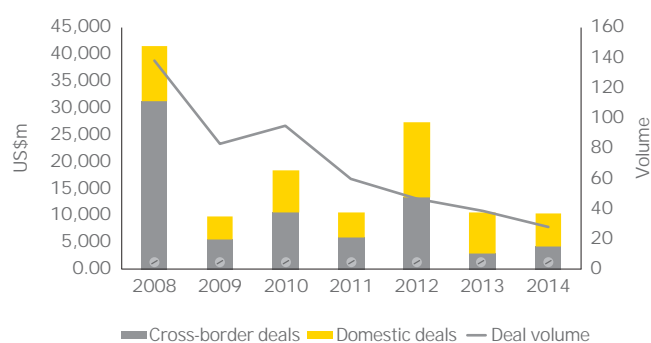
The main factors that have driven steel market consolidation in the past include mass privatization and restructuring of enterprises, liberalization of the regulations conducive to market competition, investment needs in steelworks and the opening up for foreign investment in some of the world's largest economies.⁴²

There has also been increased consolidation after an economic downturn. After the recession in the mid-1970s and again in the 1990s, there were periods of intense consolidation to counteract the effects of the downturn. After the recession in the 1970s state-owned steelmakers started becoming privatized to achieve greater profitability. From 1995 to 2005, the steel sector entered a period of intense consolidation. In 1995, the top 10 producers supplied 20% of the global steel output. By 2005, this figure had increased to about 29%.⁴³

So far, we have not seen a high degree of consolidation since the start of the most recent downturn. This is largely due to the inability of many in the sector to generate surplus cash or access the capital they need to expand. As a result, the top 10 steelmakers still account for only 28% of global output – almost unchanged from 2005. This is very low in comparison to automotive (where the top 10 comprise more than 90% of the market) or seaborne iron ore (where the top 4 comprise 70% of the market).⁴⁴ In addition, most of the consolidation thus far has increased concentration in regional markets.

Steel transactions 2008–2014

Steel deals 2008–2014



Source: Thomson Datastream, EY analysis

The current drivers of M&A in the sector are often more about survival than growth strategies. With steelmakers' attempt to reduce debt, we have seen several divestments of non-core assets. These divestments also help them to optimize their portfolios and bolster their balance sheets. Some examples include ThyssenKrupp and Severstal's divestment of their US steel operations and Tata Steel's plan to sell its European long products division. Most recently POSCO has sold off its specialty steel unit to SeAH Besteel as it seeks to strengthen its balance sheet and focus on core assets. As a result, non-core assets move to those companies, for which it is likely to be a core business, thereby intensifying market concentration for such products.

In these times of survival, there is also the risk of unplanned nationalization as governments seek to protect taxes and employment in their countries. For example, the Italian Government has approved the temporary nationalization of the ILVA steel mill while it seeks a new owner. The decree by the Government will provide €2b to clean up and modernize the site. It also preserves the employment of 14,000 people. Such steps may temporarily block the process of consolidation unless the public sector enterprise itself is a dominant player in the domestic market.

Synergies and cost savings, instead of growth, are also the major motivation for steel deals. M&A has also been conducted so as to protect margins in a volatile pricing market. Up until recently, many steelmakers were also acquiring miners to secure raw materials in order to improve input supply and costs.

Consolidation has also been restrained by limited access to capital. The weak demand outlook, depressed equity values and negative investor sentiment in light of recent rights issues is currently limiting the amount of capital available to the sector. This is particularly the case in Europe where economic growth is at best uneven and risks in the CIS have increased.

Increased volatility in financial markets over the last few years has made investors risk-averse. Shareholders are looking for early returns with short-term investments. This challenge is accentuated by the fact that steel industry's return on investment as well as enterprise valuations have generally lagged behind those of several other emerging businesses that tap entrepreneurial energy.

One of the features of capital raisings in recent times has been the divergence in ability of global majors and minors to access capital. Some trends indicate that global majors in metals industry have been able to raise capital more easily and cost effectively thereby indicating benefits of consolidation. Lower volatility of cash flows from a more regionally diversified but consolidated business with market concentration, is something that boosts confidence of lenders and investors.

42. Ślusarczyk Beata, Dima Ioan Constantin and Kot Sebastian, "Consolidation trends in the world steel industry," *Metalurgica International*, Vol. 18, No. 7, 2013.

43. "Steel industry responses to overcapacity," *OECD Steel Committee presentation by Philip Tomlinson, Metals and Minerals Economic Consultant*, 5 June 2014.

44. Ibid

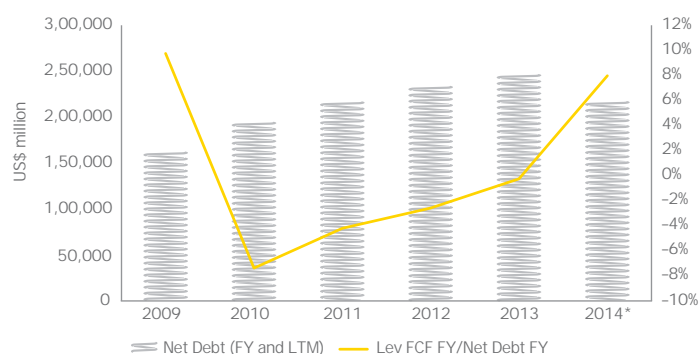
Capital raising 2011–2014

	2011 (US\$m)	2012 (US\$m)	2013 (US\$m)	2014 (US\$m)	2014 vs. 2013 % change	2014 vs. 2011 % change
IPOs	383	172	-	-	-	-
Follow-ons (equity)	13,561	2,856	9,051	2,674	-70%	-80%
Convertibles	459	163	2,774	322	-88%	-30%
Bonds	30,418	22,877	19,835	15,520	-22%	-49%
Loans	53,571	19,662	31,248	27,435	-12%	-49%
Total	98,392	45,730	62,908	45,951	-27%	-53%

Source: Thomson Datastream

However, as the pressure to globalize increases, steelmakers will be seeking economies of scale, increased market power, expanded product portfolios and extended value chains, which will continue to drive consolidation. It is likely we will see more of these strategies as profitability is improving on lower input costs, and with increased free cash flow, steelmakers have started deleveraging to improve their credit worthiness. Over time, this will allow for greater access to capital to facilitate their growth strategies and optimize portfolios.

Deleveraging is underway and free cash flow (FCF) is improving (top 50 steel producers by market capitalization on 31 December 2014)

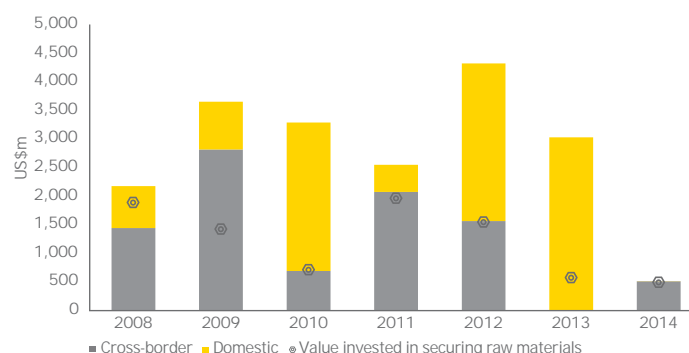


*As not all 2014 financial data is available, this is an S&P Capital IQ estimate based on the last 12 months

Source: Capital IQ; EY Analysis

Several steelmakers are already focusing on growth strategies, looking at how they can expand to gain access to areas of increased demand, regardless of location. For example, in 2014, ArcelorMittal and NSSMC targeted the high-growth US automotive steel sector through their acquisition of ThyssenKrupp's US assets. In China, however, the steel industry has witnessed less consolidation and this has severely impacted the sector, both domestically and globally.

Chinese steel M&A 2008-2014



This could change in the future, however, as the Chinese Ministry of Information and Technology (MIIT) has suggested that there should be five globally competitive super-large steelmakers. In addition, it wanted the steel sector to have a reasonable capacity utilization of over 80% by 2025.⁴⁵ The success of this new target will depend on whether Beijing succeeds in making the economy (and heavy industry) more market oriented. However, at the end of 2014, the market share of the top 10 Chinese steel producers declined to 36.6% compared with 48.6% in 2010, it seems it may take significant political will to push the sector into consolidating.

45. "Beijing extends steel sector consolidation by 10 years," *South China Morning Post*, 22 March 2015.

In areas where there has been more regional consolidation over the years, e.g., the EU, Japan and the US, we observed that steelmakers have increased market power in their regions. For instance, most recently, the US has been facing a huge increase in imports from a number of lower-cost producers. However, the pricing impact of import activity has been lessened through both stronger domestic demand and increased consolidation, providing steel players with increased market power. In addition, increased market concentration in the US steel market amplifies the impact of discipline in both pricing and capacity utilization.⁴⁶

As downstream sectors increasingly operate from global platforms, e.g., automotive, it is likely that regional steelmakers will seek to follow their customers with specialized products in order to maximize their profitability. In addition, however, as China consolidates, we are likely to see a number of super-large steelmakers who will specialize in the mass-market (long steel) segment.

Four of the top five deals in 2014 targeted assets in the United States

Value (\$m)	Target name	Target country	Acquirer name	Acquirer country
1,759	TimkenSteel Corp.	US	Shareholder spin-off	US
1,725	Acciai Speciali Terni	Italy	Thyssenkrupp AG	Germany
1,625	Severstal Columbus	US	Steel Dynamics	US
1,550	Thyssenkrupp Steel USA	US	ArcelorMittal and Nippon Steel & Sumitomo Metals Corp.	Luxembourg/Japan
770	Gallatin Steel Co	US	Nucor Corp.	US

Increased consolidation and market concentration will give steelmakers improved negotiating power and better global synergies

As the sector consolidates and market concentration increases, steelmakers will have:

- ▶ Improved risk ratings due to less volatile cash flows
- ▶ Improved negotiating power with financiers and therefore better access to capital
- ▶ Increased ability to maximize synergies across the globe

- ▶ Increased economies of scale in production and supply chains
- ▶ Increased negotiating power with both suppliers and customers
- ▶ Increasing ability to create strong alliances with customers
- ▶ Improved integration into global supply chain of customers

While consolidation will be important to increase market concentration, steelmakers will also need to make strategic alliances for raw materials, technology and financing as well as for obtaining access to parts of the value chain they don't own. Alliances with customers will also be important to develop downstream products.

46. "Steel: paradigm shift; Industry view to attractive," *Morgan Stanley*, 3 September 2014 via ThomsonOne.



Carlos Bremer
Partner
EY, Brazil

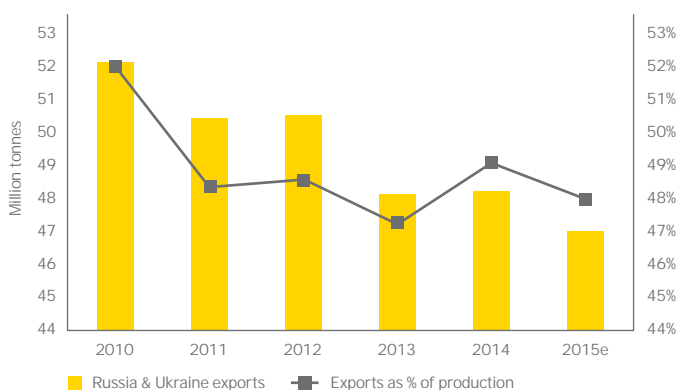
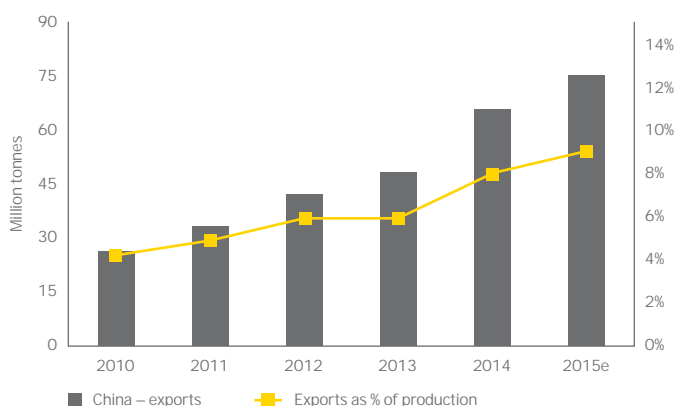
"The implementation of agile supply chain strategies will aid in the creation of competitive advantage in a rapidly changing business environment."

Increase market competitiveness

Steelmaking is highly material and energy-intensive, which combined with the unequal geographic distribution of resources and energy needed for manufacturing steel products and meeting final demand gives rise to significant trade flows.

Global steel exports grew by 9% y-o-y in 2014 marking a new record of 440mt. More than 80% of the increase was due to an increase in Chinese exports to over 90mt in 2014.⁴⁷ In 2014, steel demand growth was significantly lower in China on declining real estate demand, and as a result, there was a surge in exports. The increased spread between Chinese steel prices and those in other regions further increased to the threshold where imported steel becomes attractive despite freight costs and longer lead times.

Chinese and Russian exports increase in 2014



Source: IDFC Securities, ISSB, WorldSteel, Australian Department of Industry

In 2015, Chinese steel exports continue to increase to 40.7% y-o-y compared with the first quarter of 2014. However, steel exports have been declining month on month from 10.29mt in January, to 7.8mt in February and down to 7.6mt in March. This is largely due to the effect of the removal of the rebate on exports of boron-added steel.⁴⁸

There was also a significant increase in exports from Russia in 2014 as weak domestic demand and a falling cost base as the ruble depreciated made Russian steelmakers increasingly competitive on the global market. Russia exported 28mt of steel in 2014.⁴⁹ Despite some recovery in the ruble against the US dollar, exports from Russia continued to increase by 33% y-o-y in the first quarter.⁵⁰

The increase in global trade is also a sign of increasing pressure for the steel sector to globalize. Steelmakers can use their resources to fight with trade barriers what appears to be the inevitable globalization of the market, a battle we think they will lose, or they can admit to the inevitable and focus on ways to become more competitive, more efficient and in turn gain market share.

A number of trade barriers to frustrate Chinese steel imports are being installed, e.g., the EU imposed anti-dumping duties on grain-oriented from China and is also considering duties on cold-rolled flat steel. The Chinese exports will, however, find their way into markets without trade barriers that will displace steel imports that will in turn find their way into markets preventing Chinese imports. Inevitably therefore the trade barriers will fail.

Losing competitive edge domestically renders steelmakers exposed to imports from low-cost producers from other countries. For instance, the US lost ground to Japanese imports in 1980-2000 and, more recently, to low-cost Chinese imports. As a strategic response to increasing exports, steelmakers are innovating and looking for new ways to differentiate their products in their chosen market.

In addition, the changing behavior of downstream customers is having an impact on steelmakers. Customers are demanding customized products and delivery near their base manufacturing units. As a result, steelmakers are increasing their focus on product differentiation, moving closer to their customers and reconfiguring their supply chains.

47. "Steel & Metals," *HELVEA Baadar Bank Group*, 26 January 2015.

48. "Second Information Conference 2015 press release," *China Iron and Steel Association*, 29 April 2015.

49. "ArcelorMittal focusing on premium products and cost cutting," *Jefferies*, 4 March 2015 via ThomsonOne.

50. "Russia steel mills become world beaters after Ruble's slide," *Bloomberg*, 2 March 2015; "Russian steelmakers risk losing export markets to Chinese rivals," *Reuters*, 18 May 2015.

Product differentiation

Steelmakers are focusing on developing premium, value-added products. Several smaller producers have been more profitable than major steelmakers by focusing on high-value downstream niche products. Some higher-cost European mills at remote or inland locations, for example, did not close but rather survived by focusing on downstream value-added products, e.g., Rautaruukki on downstream construction and engineering steel products; Saltzgitter on pipes and tubes; and SSAB on heat-treated plate, high-strength steels and prefabricated construction.⁵¹

A number of steelmakers are increasingly becoming involved in the early stages of product development with their clients. Baosteel is collaborating with its clients in the automotive sector and is involved at the early stage of product development, participating in the automakers' designing and mould-making processes directly. While Baosteel's auto sheet is more expensive than that of some competitors, its reputation for reliability and quality makes it worthwhile.⁵² Nippon Steel and Sumitomo Metal Corporation are working with their customers to develop high-functioning products and integrating manufacturing, sales, technology and research divisions to enhance its ability to develop solutions for customers. ArcelorMittal is focusing on franchise development through R&D-driven product innovation.

To really differentiate products, there needs to be a fundamental business model shift in which the focus moves from solely product oriented to entire process of selling products to the customer. Products and services can be bundled together to offer increased value to the customer. This shift begins with effective management and delivery of after-sales support services and finally performance-based service contracts. However, creating and moving to the right business model to build a successful product as a service business is not always easy.⁵³

Moving closer to customers

One of the ways to move to a service-oriented focus is to really focus on building strong customer relationships. A number of steelmakers are already seeking ways to move closer to their customers in order to increase their competitiveness. US Steel recently restructured its business operations to focus on customer groups, and Hebei Iron & Steel agreed to acquire a majority stake in trading company, Duferco, enabling it to better understand demand and operate more effectively in international markets.⁵⁴ ArcelorMittal also commenced production through its joint venture in China to follow its customers into the fast-

growing Chinese automotive sector. This year, China opened up foreign control of domestic steelmakers; so potentially, we will see more foreign steelmakers take up the opportunity to tap into China's growing consumer demand by setting up shop near their customers.⁵⁵

POSCO has developed an accelerated premium product strategy by integrating technology, sales and solution marketing, for example, its launch of technical service centers to provide solutions directly to clients. POSCO is also expanding sales of automotive steel by targeting strategic regions, through overseas production sites and sales networks (US and China).

There are, however, some barriers to moving closer to customers, including:

- **Land access:** Both POSCO and ArcelorMittal have thus far been unsuccessful in setting up new steel mills in India to tap into growing Indian steel demand due to land access issues. However, they have both successfully invested in downstream businesses to acquire, service and satisfy customers in that market.
- **Environmental regulations:** Europe's policy framework on reducing GHG emissions and increasing renewable energy imposes significant implementation costs on European steelmaking operations. Based on carbon price of €40 per tonne combined with EU's planned reduction in CO2 emission allowances and the indirect impact of high energy prices, the European steel industry is estimated to need about €58 billion of additional cost between 2020 and 2030.⁵⁶
- **Energy costs:** Electricity tariffs in the EU are twice as high and are still rising in comparison to other regions in the world. As an estimate, European steelmaking operations are at a US\$1 billion energy-cost disadvantage compared with their US counterparts.

Reconfiguring the supply chain

To exploit increasing globalization and become competitive in this new world, steelmakers not only need to focus on improving their manufacturing competitiveness, but also look at how they structure their supply chains to achieve maximum efficiency. There are many variables to consider, and the graphic below shows the increasing complexity of the world in which steelmakers operate.

If steelmakers are to become more competitive, it is important that the supply chain is aligned to the steel company's strategic

51. "Steel industry response to overcapacity," *OECD Steel Committee presentation by Phillip Tomlinson*, 5 June 2014

52. "Baosteel paces China steel reinvention," *China Daily USA*, 8 August 2014.

53. "Forces of transformation: the forces driving manufacturing transformation reveal the future of competitive advantage," *PTC*, accessed 15 April 2014.

54. "U.S. Steel to shake up management structure, maintenance process," *Pittsburgh Business Times*, 29 October 2014, via Factiva; "China steel company takes controlling stake in Swiss trader Duferco," *Reuters News*, 18 November 2014

55. "China lifts ban on foreign majority control of stakeholders," *Dow Jones Top Global Market Stories*, 13 March 2015, via Factiva

56. "Saving European steel and the environment too: if leaders set unreasonable green standards, production will shift to places with a far lower environmental bar," *The Wall Street Journal*, 22 October 2014 via Factiva

objectives. The primary goal of an effective steel supply chain is to ensure high customer service is attained through reliability of product delivery and quality but at the same time minimize their costs and working capital requirements. In each steel company, the supply chain will be unique depending on the combination of the particular business strategy, marketing strategy and product strategy. Advancement of technology will aid in the global integration of planning and execution through the development of enterprise-wide applications that work with enterprise resource planning (ERP) systems.

In a global steel company the supply chain needs to be optimized at the global level rather than at each local unit. Segmented supply chains can handle the differences between how steelmakers manage high-volume, low- variability products vs. low-volume, high- variability products or small, highly profitable customers vs. large, not-so-profitable customers around the world. Tata Steel implemented product segmentation to improve its global supply chain. The aim is to group products into different classifications so that different supply chain approaches can be applied but the critical consideration is to change the way products are manufactured to improve the flow of material through the chain.⁵⁷ A more globalized steel business is able to aggregate demand for special products with lower volumes for a particular market thereby servicing their high-margin customers.

The implementation of agile supply chain strategies also aid in the creation of competitive advantage in a rapidly changing business environment. An agile strategy allows steelmakers to coordinate operations with suppliers and customers to achieve a level of agility beyond that of competitors in a globalized setting. Individual units within the supply chain must be able to rapidly align collective capabilities to respond to global changes in demand and supply.⁵⁸

Measurement of the success of the operation of the supply chain is important and as a result there is also a need for increased visibility of the whole supply chain. New technologies enable real-time collaboration between a steelmaker and its suppliers by providing a mechanism for sharing information about inventory and processes throughout the supply chain.⁵⁹ For instance, there are several initiatives being rolled out by governments and industry groups to increase the interconnectedness of traditional industries like manufacturing. Industry 4.0 is one such initiative through which manufacturers are seeking to build

intelligent factories through advanced information technologies. Through this concept the entire value chain of the steel plant can be integrated and networked leading to a significant increase in efficiency. This interconnectedness could eventually lead to fully automated production process, guaranteeing process performance and improvement in achieving higher targets.

Improving market competitiveness rather than using short-term trade defences will provide steelmakers with the means to be winners in the face of the pressure to globalize. Steelmakers who make plans to be more competitive will be able to:

- ▶ Differentiate their products by adding value through niche products for specialty sectors
- ▶ Assess and prolong product life-cycles in different markets
- ▶ Increase product development in tandem with customers
- ▶ Use customer service as a differentiator to increase product sales
- ▶ Increase the coordination of their steelmaking capabilities by consolidating customer and product requirements and creating economies of scale
- ▶ Improve their response time and agility in both production and delivery to the market
- ▶ Optimize total delivered costs
- ▶ Gain a better understanding of the drivers of working capital at a detailed level
- ▶ Improve their forecasting and demand aggregation
- ▶ Reorganize their global marketing organization to focus on customer groups
- ▶ Building strong customer relationships, extend it across the customers' supply chain footprints

57. "Using product segmentation to improve supply chain management in Tata Steel," *OR Insight*, 2012 via palgrave-journals.com/ori/journal/v25/n3/full/ori20126a.html.

58. "Game-changing trends in supply chain: first annual report by the supply chain management faculty at the University of Tennessee," accessed via [ey.com/Publication/vwLUAssets/Game-Changing_Trends_in_Supply_Chain/\\$FILE/UT%20Game%20Changing%20Trends%20in%20SC_FINAL%20Online.pdf](http://ey.com/Publication/vwLUAssets/Game-Changing_Trends_in_Supply_Chain/$FILE/UT%20Game%20Changing%20Trends%20in%20SC_FINAL%20Online.pdf).

59. "Analyst insight: Innovating the supply chain to improve supply chain visibility," *APQC*, 2014.

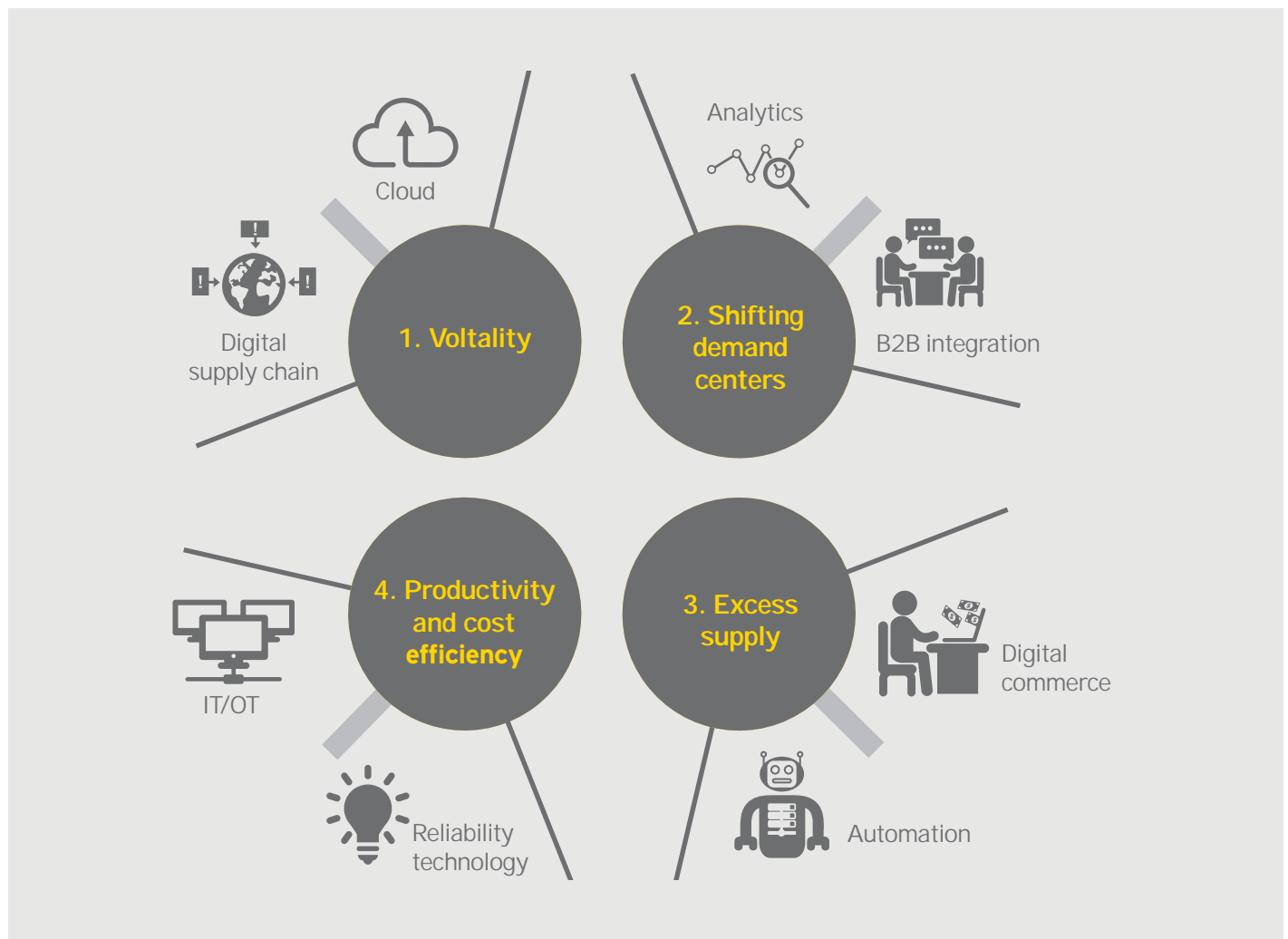


Angie Beifus
Senior Mining & Metals Analyst
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"It has become imperative for steel companies to adopt digitization, implement innovative systems and change their business models in order to stay ahead of the competition."

Embrace digital

Players in the steel industry must embrace the challenges they face and adapt to new models of working to develop differentiation, ensure sustainability and drive profitability across the value chain. It is critical to utilize digital channels to address these challenges; however, only a few have implemented the necessary changes and realized the associated benefits. Digital is already one of the defining megatrends of our generation but the explosive growth has barely begun.



1. Managing risks and volatility

Steelmakers need to understand their exposure at every stage of the value chain to the volatility and risks arising from timing differences between the selling price of steel and purchasing price of raw materials. This volatility has been driven by the risks and uncertainties in a global seaborne trade, supply chain disruptions as well as sociopolitical events in new resource and customer countries. Enabling visibility of these risks will allow steelmakers to implement strategies to manage these risks.

A fully digitized supply chain including the use of machine to machine (M2M) and geospatial technologies would allow organizations to, in real-time, track product and material shipments, through processing, to their final destination.

The use of predictive analytics to produce actionable insights and plan for future demand and supply will also allow steel producers to engage in more long-term, accurate, planning, develop more effective procurement strategies and take appropriate steps to manage any forecast risks including hedging or the divestment of assets.

In addition to supply chain related risks, there are myriad external sources of risks a steel business is exposed to. These include regulations, socio-economic factors, customer industry developments, product developments and shifting cost curves. A system that enables early capture of the impending trends, fast analysis of scenarios and guidance on potential solutions is vital for managing these risks and opportunities.

2. Taking advantage of shifting demand centers and new fulfillment models

A steel company's ability to meet changes in demand from steel consumers in major steel consuming markets, as well as the increasingly urbanizing Africa, will be a determinant of their long-term success. Steelmakers should evaluate how quickly they can rebalance their portfolios and adjust their production to keep pace with the speed and degree of change in the global economy.

Implementing initiatives such as automation as well as IT and OT convergence will allow companies to rapidly scale up or down production in their production centers regardless of location or time to rapidly respond to changes in market demand.

Predictive analytics will allow steelmakers to target and reach emerging markets, meeting customer consumption while the competition is still scrambling to size the market. Shagang Group in China, for example, has initiated a project to build the Jiulong online steel trading platform. The project is designed to incorporate information related to trading, processing and dispatching which will help the company in maximizing its sales and improving its profitability. On similar lines, Baosteel also launched Shanghai Iron and Steel Trading Centre, an online spot-steel trading platform. The company expects to earn around 20% of total sales revenue through online trading by 2018.

Other opportunities for players to differentiate themselves from the competition include reimagining the customer and supplier experience through providing an omni- or multi-channel experience.

B2B integration through initiatives such as a supplier portal will enable faster onboarding of suppliers, communicating with a wider range of stakeholders, secure transfers and visibility of confidential data and information through managed file transfers (MFT).

3. Excess supply

Excess supply threatens the steel industry's profitability and is driving commodity prices and margins lower across the sector. Steel producers can utilize digital solutions to more accurately forecast market supply and demand and proactively plan key activities in response.

A lack of transparency of production capacity is one of the contributors to the extent of excess capacity. The Chinese steel industry in particular does not have perfect visibility over the number, and total production capacity, of their steel plants.

IT and OT convergence will enable better integration of systems for upstream, midstream and downstream to provide a more accurate, holistic, view of the steel industry's supply chain and any flow-on effects from the value chain.

An integration platform of customers and suppliers' systems, such as a B2B gateway, will provide, in addition to the customer experience benefit, another avenue to monitor and forecast steel demand.

4. Driving productivity and cost efficiency

Implementing initiatives such as automation and IT/OT technology will reduce errors, downtime, improve product quality and allow steelmakers to expand faster beyond their home market and reach customers quicker. Analytics will also assist accurate identification, and rectification, of inefficient processes and learnings from efficient processes.

Reliability technology is essential to improve or maintain productivity from ageing plant and equipment as well as driving improved initial performance for new initiatives and processes. This is critical with the current global trends of consolidation in the short term and focus on enhancing productivity and efficiency of existing plants.

In an environment of rising labor and maintenance costs as well as low margins, steelmakers should look to digital offerings to maintain competitiveness. Automating critical processes will reduce an organization's reliance on human capital as well as reducing their employees' exposure to occupational health and safety risks and associated costs. ArcelorMittal's Dofasco plant in Canada, for example, has established the most automated oxygen furnace in the world. Through a six-year project the company is now able to achieve first furnace in the world which doesn't require manual sampling of hot metal. The KOBM steelmaking innovation has also helped in improving production time and product quality over these six years. Today, the sequence in the plant is fully automated from the first oxygen blow to the end

of steel tapping.⁶⁰ Reliable technology will assist steelmakers to reduce operational downtime as well and incur the lower costs of pre-emptive maintenance as opposed to repairs and rectifications.

Implementing cloud-based technologies will also enable critical systems to have greater fault tolerance, elasticity, mobility and in a more cost effective manner. The wealth of data that could be collected by and stored on the cloud can be of value to the steel companies from actionable insights provided through analytics.

As consumers of steel, such as the automotive industry, come under greater pressure to become more energy efficient and environmentally responsible not only in their own operations but also throughout their supply chain the steel industry must implement technologies to enable monitoring of their compliance with environmental obligations.

Embracing digital will enable steelmakers to:

- ▶ Expand beyond their domestic markets and connect with a wide range of stakeholders (e.g., using online trading platforms).
- ▶ Put increased focus on end-to-end productivity (reduce manpower; increase product quality; improve process efficiency; improve employee safety; increased plant reliability).
- ▶ Increase manufacturing process innovation.
- ▶ Use data analytics to operationalize value from data to drive strategic decisions and enhance visibility of actions and results.

⁶⁰. "ArcelorMittal wins top industry awards for innovation and sustainability," corporate.arcelormittal.com/news-and-media/news/2013/oct/16-10-2013b

Regional outlook

European Union

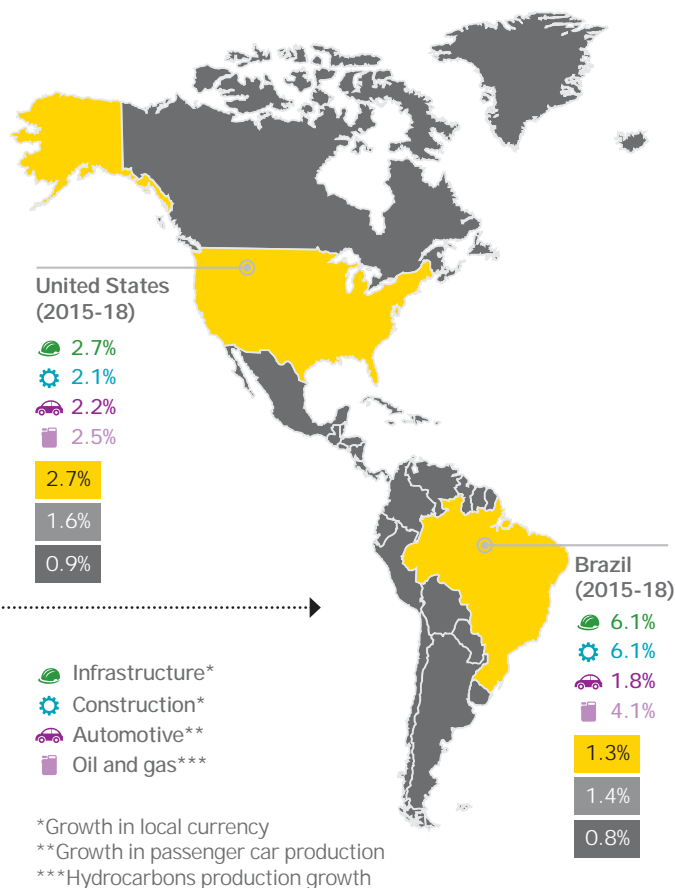
- ▶ Apparent steel consumption in the EU is expected to grow by 1.8% and 2.4% in 2015 and 2016.
- ▶ Automotive will remain the key steel-consuming sector in 2015. Total automotive output is expected to increase by 4.5% and 3% in 2015 and 2016 respectively, with major increases coming from Spain and Italy.
- ▶ The construction sector is expected to increase by 1.2% in 2015 followed by a growth of 2.6% in 2016. Construction activity will remain weak in France and Italy, but initiatives in the UK and Germany will provide support to steel demand.
- ▶ Steel imports into the EU increased by about 12% y-o-y in 2014. This trend is likely to continue in 2015 and 2016.
- ▶ Exports increased by only 1% in 2014, but the weaker euro may lead to an increase in exports in 2015-16.

US

- ▶ Steel demand in the US is expected to grow by 3.9% and 5.5% in 2015 and 2016 respectively, driven by ongoing recovery in non-residential construction.
- ▶ Construction sector steel demand is expected to register strong growth of 7.7% y-o-y and 8.2% in 2015 and 2016, whereas growth in steel demand from the automotive sector will be modest at 3.7% and 2.5% in 2015 and 2016 respectively.
- ▶ The decline in oil prices will have a flow-on effect on the steel tubular market as significant capex is expected to be cut from oil and gas projects.
- ▶ After rising by 30% in 2014, finished steel imports in 2015 have increased further by 20% to 15.3mt. This is likely to increase on stronger US demand. In addition, US buyers are attracted by international prices that are lower than domestic US prices.

Brazil

- ▶ After registering a contraction of 6% in 2014, apparent steel consumption is expected to further decline by 7.1% in 2015. Some improvement is expected in 2016 - with growth of 2.1% forecast. Steel demand from the construction sector may disappoint even in 2015. Long steel consumption in Brazil is expected to decline by 8% in 2015 and may remain flat thereafter in 2016.
- ▶ Light and heavy vehicles production is expected to be further down by 2% and 6% in 2015 after falling 15% and 23% in 2014, respectively.
- ▶ Local steel prices may benefit if currency devaluation continues in 2015.



Russia

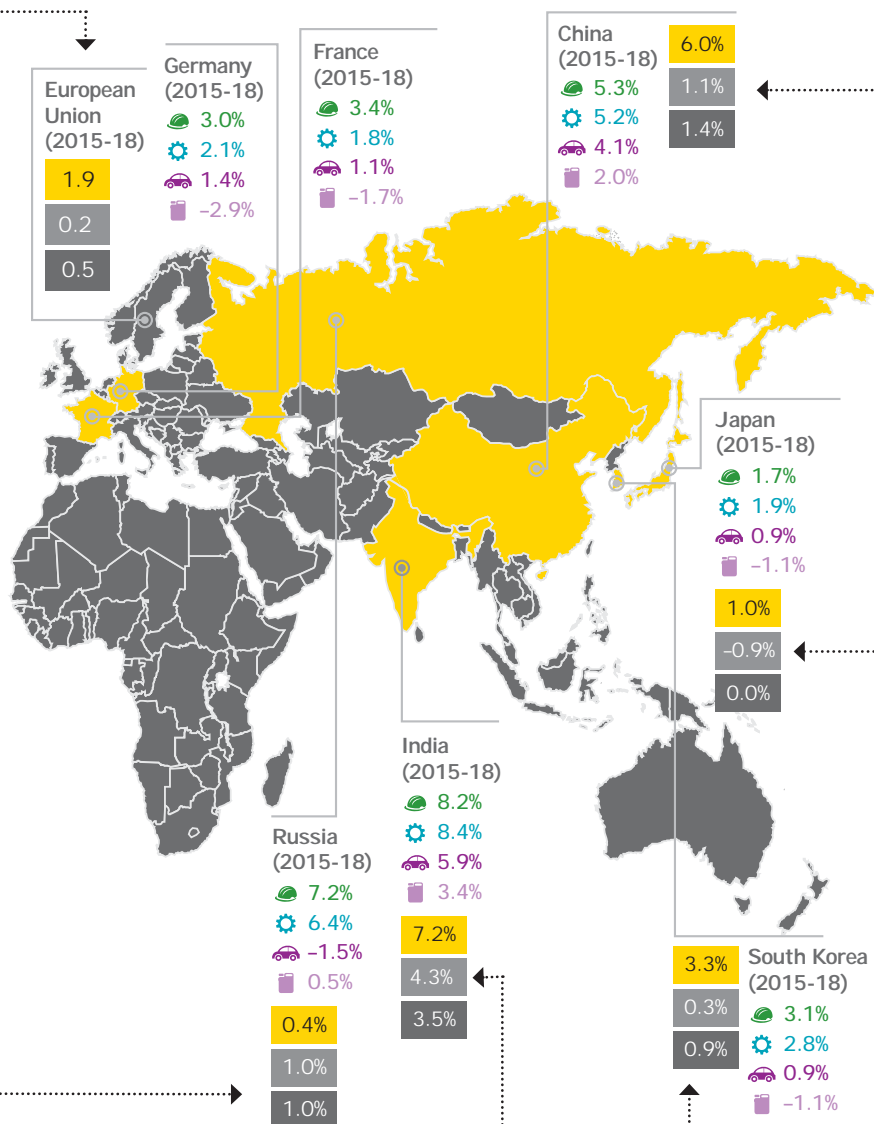
- ▶ Lower crude prices and a sharp increase in lending rates could push down apparent steel consumption in Russia by 6.7% in 2015 followed by 1.6% in 2016.
- ▶ Russia's net exports of steel increased and as the ruble has devalued in 2014, this is likely to continue throughout 2015.
- ▶ Russia is expected to export over 28mt of steel in 2015, a 16% rise y-o-y, which is likely to offset lower domestic demand. Russian steelmakers will therefore be able to maintain utilization rates around 85%.
- ▶ A shortage of high-value-added steel grades in the domestic market is giving price support to foreign players who don't have the benefit of currency devaluation.

GDP (average
2015-18)

Steel production
growth (CAGR
2015-18)

Steel demand
growth (CAGR
2015-18)

Sources: World Steel Association, BMI industry reports, African Development Bank Group, broker reports accessed via ThomsonOne



China

- After registering a 3.3% y-o-y decline in 2014, apparent steel consumption in China is expected to further decline by 0.5% in 2015 and 2016 respectively. This is mainly due to weak demand from the property sector that accounts for about 40% of the domestic steel consumption.
- Crude steel production is expected to decline by 1.2% to 813mt in 2015, in response to weak domestic demand. After a small rebound in 2016, the decline may continue to around 752mt in 2019.
- China's steel exports may rise further after registering a 50% growth in 2014 to reach 94mt. During 1Q 2015, Chinese steel exports increased by 41% y-o-y to around 26mt. On an annualized basis this leads to a projection that steel exports may rise to over 100mt in 2015.
- After registering a 15% decline in steel prices in Q414 y-o-y and a 21% decline in 1Q15, the margins of Chinese steelmakers will remain under pressure for the next few quarters, despite lower raw material prices.

Japan

- The Japanese steel producers will benefit from yen depreciation as it would translate into an increase in export volumes (which is close to 40% of the total domestic steel production) and a higher operating margin, leading to earnings improvement.
- Japan's domestic steel consumption is recovering very slowly; however, postponement of the consumption tax from October 2015 to April 2017 will support the domestic demand.
- Going forward, demand will be supported by the automobile sector (which makes about 30% of the domestic demand) and industrial machinery sectors.
- Steel production in the country is expected to grow by 1.7% and 1.9% in 2015 and 2016 respectively, driven by mild growth in domestic demand and export growth.

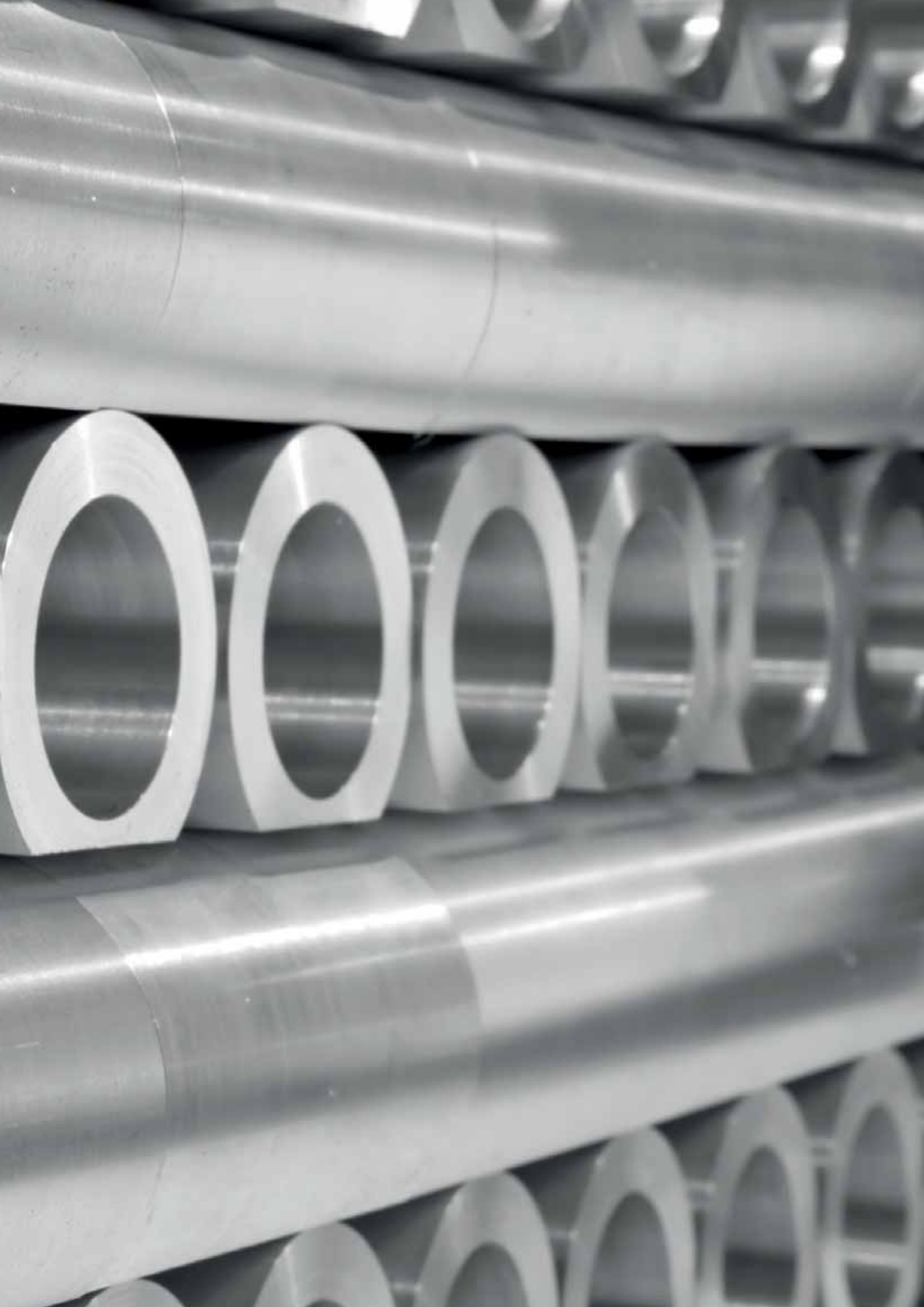
India

- After increasing by only 2% in FY15, apparent steel consumption is expected to rise by about 7% in FY16 as economic activity increases.
- Steel supply is expected to increase by around 10% in FY16, but demand is not expected to grow in tandem. As a result, capacity utilization may fall below 78%.
- Indian steel imports increased by 71% y-o-y in FY15. This trend is expected to continue in FY16 but the quantum of imports may vary depending upon whether India raises its import duty on steel products.
- In the 12th Five Year Plan, the Indian Government intends to invest about US\$1 trillion in the infrastructure sector. This increased focus on infrastructure development bodes well for incremental steel demand in India.

South Korea

- The South Korean steel market is expected to have a tough year ahead, given sluggish demand in automotive and shipbuilding industries and only modest growth in the construction sector. The Korea Iron & Steel Association foresees a modest 3% growth in domestic demand in 2015 to about 57mt compared with a 7% increase in total finished steel demand in 2014.
- The South Korean steel market is particularly vulnerable to slowing Chinese steel demand. With minimal non-tariff barriers, its domestic steelmakers have been left vulnerable to the surge of cheaper steel exports from China which are expected to grow by 0.6% in 2015 after registering a 17.4% y-o-y increase during 2014.
- Major producers like POSCO are increasing their focus on improving product mix (high-end steel); however, as most of the business is targeted at lower-margin export, the overall positive impact on earnings is expected to be lower in 2015.





How EY's Global Mining & Metals Network can help your business

With a volatile outlook for mining and metals, the global mining and metals sector is focused on margin and productivity improvements, while poised for value-based growth opportunities as they arise. The sector also faces the increased challenges of maintaining its social license to operate, balancing its talent requirements, effectively managing its capital projects and engaging with government around revenue expectations.

EY's Global Mining & Metals Network is where people and ideas come together to help mining and metals companies meet the issues of today and anticipate those of tomorrow by developing solutions to meet these challenges. It brings together a worldwide team of professionals to help you succeed – a team with deep technical experience in providing assurance, tax, transactions and advisory services to the mining and metals sector. Ultimately it enables us to help you meet your goals and compete more effectively.

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