New competitive realities in steel

The steel industry has been confronted with unprecedented increases in prices of raw materials, freight and energy in recent years. As a result, the costs of steelmaking have risen around the world. However, the impact has not been equal for all steel manufacturers. Differences in regional cost competitiveness have become more pronounced, to the benefit of mills with access to cheap raw materials and energy.

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After decades of poor financial results, the steel industry has realised a structural improvement in its financial performance. As shown in Figure 1.1, 2005 marked the fifth consecutive year of increasing profits, and the third consecutive year of record profits, for the steel industry. Even in Q3 2005, after significant declines in sales prices for finished products, combined earnings of the world’s top 67 listed steel mills were still double those generated during the previous cyclical peak in Q2 2000 (see Figure 1.2).

This result is even more impressive in the light of the strong cost increases the steel industry has absorbed in recent years. From 2003, steel mills have had to accept double or triple digit price rises for most of their key input factors: iron ore, coking coal, coke, scrap and energy. As a result, the cost of steel production has surged. The global operating cost of HR coil, for example, has increased from an estimated US$175–250/tonne in 2002 to US$300–420/tonne in 2005.

It is not only the average cost of steel production that has increased, but also the difference between high and low cost producers in the world. The cost of raw materials, labour and energy has always varied by region, depending on local availability of resources. Though the markets for iron ore and coal are global, and prices on the local market tend to follow those on the international market, producers in regions with abundant reserves usually have a strategic cost advantage over producers that need to source their supplies from overseas. A considerable number of mills in countries with large reserves of raw materials own part or all of their supply requirements. Examples include Severstal, NLMK and Evrazholding in Russia, CSN in Brazil, SAIL and Tisco in India, US Steel in the USA and several Mittal Steel plants in various parts of the world. Other mills in these countries that do not possess their own mining reserves at least have the benefit of not having to pay export tariffs and costs of seaborne freight.

The unprecedented increases in the price of steelmaking input factors have had a major impact on the cost competitiveness of steel mills in different countries and regions. Figure 2 shows the average operating cost of HR coil in 2005, broken down into the main components of raw materials, labour and energy. At the top end of the range, with an estimated production cost of US$420/tonne of HR, are steel producers in Western Europe, Japan and North America, which face cost disadvantages in all three main cost areas. The lowest cost...
Much of the price increases mentioned above are caused by a global imbalance between supply and demand for raw materials and freight, which first emerged in 2001. This is the result of the unexpectedly strong economic development of China and severe shortages in raw materials production and transportation capacity, not only in vessels, but also in railways and handling and storage facilities.

With growth in Chinese steel production continuing at strong levels and major capacity expansions for raw materials only expected to come on stream in 2007/2008, raw materials prices and freight tariffs are projected to remain high until at least 2007. In the longer term, however, prices for iron ore and coking coal, are likely to fall back closer to levels from the past. In principle, there are sufficient reserves of these materials around the world to feed future requirements for many more generations, even at strong continuing consumption growth. A certain part of the price increase, however, is likely to prove structural, as additional production of iron ore and coal will tend to be mined at higher average cost, from more...
remote locations, requiring more transportation, and from lower quality reserves, requiring more beneficiation. Like raw materials, high tariffs for seaborne freight will attract more supply, which will bring the market back to balance, though with a time lag of several years.

The differences in cost competitive-ness between mills with captive supply of raw materials, mills buying raw materials on the domestic market and mills importing raw materials from overseas are likely to regress in the years ahead.

LABOUR

Though labour costs account for a much smaller share of steelmaking costs than raw materials, the price of labour varies much more by region than prices for iron ore, coal and scrap. Of all countries with a significant steel industry, India, the Ukraine, China and Russia have the lowest wages. In 2005, hourly labour costs (in manufacturing) amounted to US$1.0 in India and the Ukraine, US$1.1 in China and US$1.6 in Russia. By comparison, labour costs in the developed economies of the USA and Japan stood around US$22/hr, while they amounted to US$33/hr in the welfare state of Germany.

As the economies of China, India and Russia are expanding rapidly, the key question is: How soon will wages catch up with those in mature markets? Indeed, forecasts by the Economist Intelligence Unit (EIU) suggest that labour costs in these three countries will double in the next five years (see Figure 5.1). However, as shown in Figure 5.2, the difference with wages in mature countries is so large that even a doubling of wages in the near future will leave hourly labour costs in China, India, and Russia at only a fraction of those in mature economies.

While wages in Germany, the USA and Japan increase much more slowly in relative terms, they grow faster in $/hour terms, as they increase from a much higher base.

In fact, it takes decades for labour costs in developing economies to catch up with those in developed markets. This is illustrated in Figure 6.1, which shows the labour costs in Euros/hr in Germany compared to Spain and Ireland – two countries that have seen rapid economic development since their accession to the EU. In 2004, after 18 years of EU membership, hourly labour costs in the Spanish manufacturing sector were still only 48% of those in Germany. Moreover, in $/hour terms, the difference between the two countries has actually widened during the past 10 years. A similar trend can be seen in Asia (see Figure 6.2), where South Korean hourly labour costs also stand at just 45% of those in Japan, despite years of economic stagnation in Japan and firm long-term development in South Korea.

Low wages will remain a competitive advantage for steel producers in developing countries for decades to come. Two of the world’s main steelmaking countries, China and India, have the additional advantage of holding huge untapped reserves of manpower in their agricultural sectors. As urbanisation in both countries continues, new job seekers from the countryside will provide labour markets with additional supply for many years, which will have a dampening impact on wage inflation.

There is a downside, however. Most mills in countries with low wages also have much lower labour productivity than mills in high wage countries (see Figure 7.1), as they have less incentive to increase labour efficiency. This explains why the differences in labour costs per tonne of steel between high and low wage economies are much lower.
than the differences in wage levels. To retain their competitiveness, steel mills in low wage countries need to ensure that productivity keeps up with rising costs of employment. Moreover, mills in low wage countries have an opportunity to enhance their international competitiveness by improving productivity faster than rising US$ costs of employment. Figure 7.2 shows the development of labour productivity of the main steel mills in India and Russia from 1998. Although labour productivity in India is still very low, Indian steel mills have made considerable improvements in recent years and employee productivity has almost doubled since 1998. However, so have hourly labour costs, which have offset much of the productivity gains. Russia’s steel industry has managed to raise labour productivity by 39% since 1998, but costs of employment in US$ terms have more than doubled in the same period. While Indian labour cost competitiveness has remained stable, Russian labour cost competitiveness has actually worsened since 1998, despite the productivity gains realised.

POSCO is an example of a company that benefits from both low wages (in comparison to mature economies) and very high labour productivity. POSCO’s labour costs per tonne of steel are among the lowest in the world and are without doubt one of the factors that have made the company the world’s most profitable steel mill, with EBITDA of US$7.4bn in 2005.

ENERGY
Compared to raw materials and labour, energy has a relatively modest impact on the competitiveness of integrated mills. However, the days of cheap energy are over. Except for the energy released by coal and coke, the steel industry’s energy consumption mainly consists of natural gas and electricity. Unlike iron ore and coal, reserves of natural gas are rapidly depleting: since 1980, global reserves have decreased by 26%. Meanwhile, consumption of gas continues to increase at an ever accelerating pace, especially in China and India. Three of the four regions that consume the most gas, North America, Europe and Asia, have low reserves themselves. Indeed, at current production levels these three regions have only enough gas reserves left for one or two generations (see Figures 8.1 and 8.2).

The situation is most pressing in North America, which has just 19 years of production left (at 2004 output levels). The increasing shortage has already made itself felt to gas-intensive industries in the USA and Mexico. Not only are these industries competing for ever scarcer gas supply with one another, but also with electricity producers and commercial and residential consumers. Under pressure from high gas prices, several US (gas-based) DRI plants were idled and recently relocated to areas with more abundant gas, such as Trinidad & Tobago and the Middle-East. In Mexico, Mittal Steel Lazaro Cardenas and Ternium Hylsa are regularly forced to interrupt their production of DRI when gas prices have risen too high.

Most steel mills outside Russia and the Middle East will increasingly have to rely on alternative — often more expensive — energy sources and on imported gas. International supply of natural gas is dominated by Russia and Iran, which together hold 50% of the world’s identified natural gas reserves (see Figure 8.1). While oil is a global market, gas is a much more regional market. Large scale international transportation is limited to pipelines, which require heavy investments and can be vulnerable to interruption. The market for LNG is still in its infancy and...
INTRODUCTORY THEMES

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© Figs.8.1/8.2 Production and reserves of natural gas, 2004/Gas reserve life duration at production levels 2004 (years)

innovative way of doing so is to establish joint purchasing with companies in other energy-intensive industries, such as aluminium and chemicals, to increase bargaining power over energy suppliers. In France, for example, large industrial consumers of energy co-operate intensively, which enables them to secure advantageous contracts. The French example was recently followed by Corus in The Netherlands, which formed a consortium with eight other large Dutch energy consumers with the objective to secure better energy tariffs.

CONCLUSIONS

The differences between high and low cost producers of steel have increased since 2002, as strong price rises in steelmaking costs have had a varying impact on steel mills in different parts of the world. The winners are the mills in the developing markets of Russia, Brazil and India. The global supply/demand balance for raw materials has tightened, and will remain so in the short to medium term future. In the longer term, however, prices for raw materials and freight tariffs will decrease from current exceptional levels and the competitive advantage of mills with access to local raw materials will regress. To retain their current cost competitiveness, steel producers in developing countries will also have to improve labour and energy cost efficiency. Low wages will remain a competitive advantage for mills in low wage countries for decades, though this advantage is often not fully used by mills with cheap supply. However, cost is not the only important competitive differentiator. Mills in developing countries will also have to further increase investments in R&D, product quality, customer support and delivery performance. These criteria are particularly important in view of the continuing consolidation and globalisation of the steel industry and the increasing involvement of leading steel mills in every corner of the world.

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