A tale of two industries

The diverging paths of steelmakers in developed and developing countries

China and the developing world have played an increasingly important role in the global steel industry throughout the past decade. According to the World Steel Association, from 1998 to 2007 steel production in China grew at a 14 percent compound annual rate, versus -3 percent for the United States. Over that same period, China’s share of global steel production grew from 14 percent to nearly 40 percent. While the current economic downturn has slowed the growth of the steel industry worldwide, this particular recession is likely to impact the U.S. (and other developed economies) longer and to a greater extent than China (and other developing countries). In fact, while the experiences of steelmakers in different countries have already diverged, this trend is likely to accelerate. Steelmakers worldwide face drastically different management agendas, as those in developed countries face the challenges of an industry static or in decline, while those in developing countries must manage for profitable growth.

Caught in the crossfire

Just as the current downturn has affected world regions differently, the potential timing and trajectory of any recovery varies as well.

In the U.S., for example, an unfortunate combination of dynamics shaped an especially severe, and potentially long-lasting, economic slowdown. The “boom” years of 2004 to 2007, when GDP growth averaged nearly 4 percent, were largely supported by a massive increase in credit. The housing industry was the most obvious beneficiary, with both new housing starts and prices of existing homes reaching new heights. The ease with which credit was extended turned out to be unsustainable; by some estimates, as much as $3 trillion of mortgages were sub-prime or “Alt-A” at the time of the collapse (Telegraph.co.uk, September 16, 2008).
Unfortunately, the housing “bubble” was pricked at the same time the U.S. automotive industry was deteriorating. Easy credit also supported robust automotive sales volumes, which temporarily masked uncompetitive cost structures and excess capacity. As sales volumes fell in the face of a general economic decline, these weaknesses became exposed, resulting in severe financial distress.

Thus began a self-reinforcing cycle that continues to dampen economic activity and steel demand. The credit crisis has created dramatic declines in new home construction, and banks have limited credit availability to virtually all commercial and industrial firms. Financial markets fell precipitously, eliminating a substantial amount of household wealth. Consumer confidence waned, consumer durables sales and production declined, industry capacity utilization fell, unemployment rose, consumer confidence fell further, and so on. Pushing back against these depressing conditions is the U.S. government’s stimulus package; $780 billion in federal spending meant to help reverse the economic downturn. Perhaps it will, although a substantial amount of the stimulus spending is aimed at such transfer payments as unemployment benefits, which will not quickly translate into growth in consumer demand for goods such as houses, cars, and appliances. Capacity utilization in the U.S. steel industry was below 50 percent between November 2008 and July 2009 (Federal Reserve Statistics). The last time the U.S. steel industry’s capacity utilization reached such depths, during the recession of 1982–83, over 20 million tons of steel production capacity was permanently shuttered (Federal Reserve). Only a very steep and robust recovery, or the permanent closure of significant levels of capacity, could possibly return utilization levels to the 85+ percent level the industry enjoyed during its periods of sustained profitability between 2004 and 2007 (Federal Reserve).

Figure 1: Dynamics of the recession on developed and developing countries

Source: Deloitte Consulting
These deep and tangled forces depressing the overall economy and steel demand in the U.S. stand in stark contrast to the less dramatic effects seen in China. The Wall Street Journal (“Heard on the Street,” Feb. 9, 2009) estimates that 40 percent of China’s economy is related to exports, many of which are directed to the U.S. and other developed countries. Weaknesses in those countries softened demand for Chinese exports. In addition, a substantial amount of China’s trade surplus winds up in U.S. dollar-denominated financial assets, and the decline in the U.S. dollar hurt those investments. Employment growth slowed, and economic growth fell from double digits to an estimated 7.2 percent in 2009 (The World Bank). A slowdown, certainly, but hardly in the same class as the U.S.

Of course, not all developed countries are having the same experience as the U.S., and not all developing countries look like China. Clearly, these two countries represent the opposite ends of a spectrum. However, in terms of the current economic climate and the prospects for a rapid and substantial recovery, it could be argued that developed countries are likely to experience a longer period of lower levels of demand, especially for steel-intensive goods, than developing countries.

One final distinction between developed and developing economies may have longer term but equally significant effects: population demographics. The “baby boomer” generation in the U.S. (and, to a lesser extent Western Europe) that is now passing from middle age to retirement has been responsible for a substantial part of recent housing and consumer durables spending. But as boomers pass from their peak earning and spending years into retirement, they are likely to become less of a factor. Rather than contributing to capital formation and consumption, they tend to draw down their capital assets and spend much less. The following generations are not only smaller, but may demonstrate a far different consumption pattern, which may be less steel intensive (e.g., smaller homes and cars).
A divergence already in evidence
Stepping back from the current downturn, we see ample historical evidence of the steel industry following two very different paths. In fact, the divergence in the fortunes of steel companies has been in evidence for some time.

The past two decades have included periods of impressive economic growth in both the developing and developed world. Over that time, global steel production has nearly doubled (see Figure 2). However, the period also reflects a dramatic shift in steel production to the developing world.

Production levels in developed countries in 2007 were only marginally higher those of the late 1980s. Despite some turbulence beneath the totals — the growth of mini-mills in North America since 1990 has been dramatic — almost all of that growth has come at the expense of older, less efficient integrated capacity, which has been shuttered. At best, steel production in the developed world over this period can be described as stagnant. At the same time, production levels in the developing world have more than doubled.

Figure 2: World steel production by region/country, 1989–2008

![Steel production chart](source)

Source: [www.worldsteel.org](http://www.worldsteel.org), Deloitte Consulting
Will the trend continue?
The critical questions for steelmakers in the developed world are: How long will the downturn last, and how steep will be the recovery? A strong case can be made that the impact of this downturn will be felt for years, not months.

Consider the automotive industry, a critical consumer of steel, especially steel produced by integrated mills. As a bellwether of future steel demand, it is entirely possible that any automotive industry recovery may be too little, too late for many of the steelmaking operations currently idled.

In December 2008 (well before the annualized automotive sales numbers hit bottom), the Chief Executives of the Big 3 automakers appeared before Congress to make their case for government assistance. Each presented a forecast of future automotive sales that captured a “most likely,” “high,” and “low” sales scenario. Using Chrysler’s set of assumptions as the basis for a forecast of vehicle sales and production to the year 2015 (and bearing in mind these forecasts had to paint a picture optimistic enough to ensure repayment of the loans), we find an average annual domestic vehicle sales and production volume for the period 2009–2016 over 4 million units fewer than the period 2000–2006. That suggests an average flat rolled steel market for a seven-year period over 5 million tons lower than the prior seven years.

In practical terms, this is the equivalent of one large integrated mill idled for seven years (or two smaller ones). Of course, seven years is an impossible period for a “warm idle” — in reality, the effect of a delayed and tepid recovery in just this one steel market would be the permanent closure of at least one North American automotive mill. It should be noted that the effect of a prolonged downturn in automotive markets on SBQ (Special Bar Quality) production is even more profound.

Figure 3: U.S. Automotive sales and production, 2000–2006

Source: Wards, Global Insight, GM, Deloitte Consulting
Of course, construction markets for steel are in aggregate larger than the automotive market. It would be natural to hope for a more rapid recovery in steel demand to stem from a rapid increase in residential and non-residential construction. Unfortunately, sizeable construction projects rely on bank credit, and the near-term picture for an easing of credit conditions is not encouraging.

Many thousands of pages have been or will be written on the causes and effects of the credit crisis. Suffice it to say that growth in bank credit to construction and related projects — especially residential housing — will likely require the banking system to have most of its problem credits behind it, not ahead of it. As can be seen in Figure 4, the FDIC estimates that real estate loans in non-accrual status as of the end of the first quarter of 2009 had ballooned to over $160 billion, versus $25 billion just three years ago. In addition, real estate loans over 90 days due — much of which will soon be considered non-accrual — were an additional $70 billion. It is difficult to expect an easing of credit conditions until these levels show a significant and sustained decline.

The picture in Western Europe is not much better. A recent study by the European Central Bank (Financial Stability Review; June 2009) estimates that the write-off rate of household mortgages will double this year, and increase over 25 percent next year. It estimates that there remains approximately $240 billion of potential charge-offs still on the books of Euro area banks. These are not conditions that suggest a rapid easing of credit in either North America or Western Europe. Expectations that a boom in construction activity will shorten the duration of the doldrums in steel demand, or offset a potential decline in automotive demand, are, at best, optimistic.

Figure 4: Housing and real estate credit, March 2006–March 2009

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<tr>
<th>U.S. Real estate loans in non-accrual status</th>
<th>Euro area bank write-off rates on household mortgages</th>
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<td><img src="image1" alt="Graph of U.S. real estate loans in non-accrual status" /></td>
<td><img src="image2" alt="Graph of Euro area bank write-off rates on household mortgages" /></td>
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Source: FDIC, Deloitte Consulting

Source: European Central Bank, Deloitte Consulting
These dynamics playing out in developed economies do not suggest a sustained depression in steel demand worldwide. Globally, the fundamentals of steel demand are quite strong.

In fact, the most powerful forces driving steel demand are aligned quite well to sustain a prolonged period of growth in global demand. In Figure 5, the chart on the left describes steel consumption per capita (y-axis) versus GDP per capita (x-axis) for countries representing both the developed and developing world. A familiar pattern emerges. As economies develop and modernize, steel consumption per capita grows. This growing steel intensity of developing economies reflects the wide range of applications for steel — basic infrastructure, water treatment plants, food processing, distribution centers, and, as a middle class emerges, durable goods such as appliances and automobiles. This pattern is inescapable, and typically drives long-term consumption growth of 6 to 8 percent per annum as most economies develop. Outliers are possible; China has clearly sustained more rapid growth in economic activity and steel consumption. Countries such as South Korea and Japan are significant exporters of steel-containing goods, so their per capita steel consumption is significantly higher than other developed countries. As can also be seen by the relative size of the bubbles, most of the world’s population is still in the early stages of economic development and at the low end of steel consumption per capita. Sustained, long-term growth in global steel demand is inevitable.

This process of economic evolution can be demonstrated by the chart on the right of Figure 5. Over the previous decade, growth in per capita steel consumption has been negative in the U.S., modest in developed economies such as those in Western Europe, and substantial in developing economies such as Indonesia, Russia, South Korea, and China. This pattern is likely to continue, and it should be noted that a likely cause of the decline in per capita steel consumption in the U.S. is the migration of manufacturing activity — and the consumption of steel that supports it — to low-cost countries such as China and Mexico. This may not be a passing trend, and it may soon be felt more acutely by other developed countries such as Japan and Western Europe. To some extent, the rapid growth in steel demand in developing regions is a “cannibalizing” of steel demand in developed countries. This is a long-term dynamic that should be of significant concern to steel industry executives, and will serve to further the disparity of market prospects in developed versus developing economies.

Figure 5: Worldwide per capita steel consumption

Per capita GDP and steel consumption

1998–2007 CAGR per capita steel consumption growth

Source: World Steel Association, Deloitte Consulting
As we have seen, even absent the effects of the current downturn, steel can be considered a growth industry in developing economies, and either static or in decline in developed countries. The long-term trends in demand are perhaps best crystallized in a view of projected automobile production recently developed by the economic forecasting firm Global Insight. As shown in Figure 6, over the 25-year period from 1995 to 2019, automobile production in the U.S. is predicted to decline by 15 percent; in China, it is predicted to grow over 14-fold.

Figure 6: Projected automobile production in the U.S. and China

Managing for the future
Facing such different market fundamentals, steel businesses in different world regions need to be managed differently.

Figure 7: The differing agendas of steelmakers

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<tr>
<td>• Facility rationalization</td>
<td>• Facility expansions</td>
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<tr>
<td>• Manage for cash</td>
<td>• Manage for earnings</td>
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<tr>
<td>• Decrease leverage</td>
<td>• Leverage for growth</td>
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<tr>
<td>• Streamline SG&amp;A to market/product portfolio</td>
<td>• Align SG&amp;A to growth opportunities</td>
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<tr>
<td>• Minimize R&amp;D investments</td>
<td>• Align R&amp;D to growth opportunities</td>
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<td>• Grow via vertical integration</td>
<td>• Grow via vertical/ horizontal integration</td>
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The agenda for steelmakers in developed economies will likely reflect a defensive orientation. More specifically:

• Facility rationalization is almost inevitable; for multi-site producers, opportunities to create new process routes should be explored, and exploiting the most efficient production combinations should be the objective.

• “Cash is King” seems to be the new mantra for U.S. steel producers, and that sentiment should be sustained. Opportunities to reduce inventories, improve accounts payable/receivable metrics, and reduce overall expenses should be explored. New capital expenditures should be prudent and only undertaken if they meet rigorous screening processes.

• In the same vein, the entire economy is deleveraging, as should steel companies. Even though growth opportunities still exist (e.g., upstream or downstream integration), exploiting those opportunities via creative financing arrangements will be preferred to traditional debt. Or, growth initiatives can be focused on less capital-intensive elements of the value chain, such as finishing or processing.

• SG&A expenses should be pared. Finding leaner ways of delivering support services and outsourcing non-core activities will be increasingly important.

• R&D must be actively justified. The costs of developing new grades of steel for automotive applications, for example, should only be shouldered where growth in sales volumes and price realizations can justify incremental investment.

• Investors demand growth, and the options available for steelmakers in developed countries are limited. “Horizontal” mergers must yield significant and realizable synergies to justify an acquisition premium, so most initiatives are likely to be in upstream (raw materials) or downstream (distribution or processing) assets. Firms with the financial wherewithal to do so will be seeking to reposition themselves geographically.

• Steelmakers in developed regions, on the other hand, face an entirely different set of challenges associated with managing profitable growth.

• Maximizing the productivity of existing assets and making informed decisions about new facilities will align growth to both the volume and quality needs of targeted markets.

• Earnings, rather than cash, will be paramount. Equity valuations will reflect management’s ability to achieve growth without sacrificing profitability.

• Leverage can be an attractive means of raising capital resources on a tax-efficient basis, and should be part of the toolkit that helps companies respond quickly to take advantage of growth opportunities.

• Both SG&A and R&D expenditures should be configured to help companies penetrate new markets, build defensible positions, and achieve and maintain competitive advantage.

• Growth opportunities abound, both organic and via acquisitions. Decisions about geographies, product lines, market sectors, and technology capabilities will inform horizontal integration strategies. Both upstream and downstream integration opportunities will be abundant as the developing economies establish new business models in a more dynamic business environment.

• Human capital development will be as essential to achieving successful growth as financial assets or capital equipment.
What’s next?
The diverging experience of steelmakers in developing and developed countries has been playing out gradually over the last few decades. The recent economic turmoil appears to have longer-lasting effects in developed countries than in developing countries, so that divergence is likely to accelerate. Should current conditions in the U.S. credit and consumer durables markets persist into 2010, it is realistic to expect that more than 5 million tons of steelmaking capacity in North America would be permanently closed. Steel companies in developed countries with the financial means to do so may seek to reposition their geographic footprint, making investments in developing countries just as their customers have done. In developing countries, we would expect to see both domestic and international investment to help maximize growth. Clearly, the management imperatives of steel businesses are diverging: The challenges to senior management are very different, and the agenda and skill sets of each must be honed to fit the circumstances.
Richard "Dick" McLaughlin serves as the sector leader for Deloitte Consulting’s Metal industry practice, and as a Strategy & Operations specialist leader in the Corporate & Competitive Strategy service line. He brings 20 years of experience as a strategy consultant to the metals industry practice at Deloitte. His experience includes the delivery of management consulting services in support of the development, design, and execution of a wide range of projects for companies in the mining and metals industries, encompassing corporate and business unit strategy development, new market and product planning, merger, acquisition and capital investment planning and appraisal, and shareholder value enhancement. His steel product and market experience, knowledge and skills includes virtually all carbon steel products; iron ore, coal and other steelmaking raw materials, high nickel alloys, and fabricated steel and aluminum products. Dick has market eminence as a thought leader in process/metals and has authored numerous articles for industry trade publications and presented papers at conferences such as those sponsored by World Steel Dynamics, AISI, ILAFA, Steel Business Briefing and Metal Bulletin.