

WORLD STEEL DYNAMICS

The Steel Boom: Realities, Illusions and Consequences for the Forging Industry

Presentation to:
19th International Forging Conference
Chicago, Illinois

by:
Peter F. Marcus
Managing Partner

September 8, 2008

WORLDSTEELDYNAMICS

World Steel Dynamics Inc.

456 Sylvan Avenue
Englewood Cliffs, New Jersey 07632

Tel: (201) 503-0900
Fax: (201) 503-0901
E-mail: wsd@WorldSteelDynamics.com

Peter F. Marcus
(201) 503-0902

Karlis M. Kirsis
(201) 503-0905

Patrick A. McCormick
(201) 503-0920

Becky E. Hites
(201) 503-0935

Sheryl Iwanski
(201) 503-0911

Yasuyuki Mogami
Philipp G. Englin
Varney Blamah
Zhang Chang An

Noboru Uchida
Michele D'Augustine
Liu Jinghai
Dr. Xu Zhongbo

The information contained in this report is based upon or derived from sources that are believed to be reliable; however, no representation is made that such information is accurate or complete in all material respects, and reliance upon such information as the basis for taking any actions is neither authorized nor warranted.

It should be noted that a variety of factors, including changes in prices, shifts in demand, variations in supply, international currency movements, technological developments, governmental actions and/or other factors, including our own misjudgments or mistakes, may cause the statements herein concerning present and future conditions, results and trends to be inaccurate.

World Steel Dynamics Inc. may act as a consultant to one or more of the companies mentioned in this report.

Copyright © 2008 by World Steel Dynamics Inc. all rights reserved.

WORLDSTEELDYNAMICS

The Steel Boom: Realities, Illusions and Consequences for the Forging Industry

DISCUSSION

- I. **The global economy entered a period of higher growth in 2002, because of rising fixed asset investment (FAI) as a share of global GDP. WSD thinks that this same phenomenon – i.e., rising FAI to GDP – is likely to continue to about 2025.** We reach this conclusion in part by looking at other high-growth periods for the global economy – i.e., from 1900 to 1929 and 1946 to 1974. The key new force in the 2000-2025 timeframe is the impact of the Information Revolution (which in a number of respects might be regarded as an extension of the Industrial Revolution). The Information Revolution is promoting cost cutting efforts, discovering pockets of unused capacity, permitting new plants to be built faster and cheaper, hastening the implementation of new technologies, dampening prices because of more rapid increases in manufacturing capacity and infrastructure, and stimulating global trade.

The importance of the Information Revolution cannot be underestimated. In effect, it has accentuated the power and response time of the Invisible Hand – i.e., price allocates resource. The invisible hand no longer is a slap to the face; it is a powerful fist to the gut.

- II. **The rise in fixed asset investment (FAI) as a share of GDP is the key reason why demand for steel and foundry products has risen so sharply since 2002.** Rising FAI is great for the steel industry because about 40% of global steel demand ties to construction and another 40% to capital spending – these items are the components of fixed asset investment. (*Note: About 20% of steel demand ties to consumer durables production.*)

The engines of growth for the global economy in the years ahead will increasingly be China and the rest of the Developing World – because they are becoming an ever larger share of global GDP. The Developing World's share of global GDP, based on IMF purchasing power parity calculations, has risen from 44% in 2002 to about 50% in 2007, and may rise to 60% in 2017. In the Developing World, consumers are far too poor for there to be a sufficient boom in consumer spending to propel upwards significantly their economies. The key to growth for China and other Developing World countries is their propensity to have high and/or rising fixed asset investment as a share of their GDP.

In the steel industry's case, about 33% of global steel demand is now in China, about 28% in the rest of the Developing World and 39% in the Advanced Countries.

- III. **WSD's *Global Income Shift Paradigm (GISP) Theory* provides an analysis of the forces driving the global economy in the past six years.** The *GISP Theory* offers powerful evidence it is fixed asset investment growth, not consumption growth, that's the main driver of expansion in the global economy. The GISP analysis shows that fixed asset investment has been growing as a share of GDP in the Developing World.

WORLDSTEELDYNAMICS

Advanced Countries in today's environment are poorly suited to benefit from these new trends. In the case of the USA, for example, 70% of GDP is consumption and only 15% is investment. Slow GDP growth, small wage increases and rising oil and food prices is really quite a disaster for consumers/workers in the United States.

- IV. **The steel industry in 2003 entered an “Age of Discontinuity” in which the “pattern of industry events” was far different from those in the prior 25 years.** A critical and highly unusual development occurred in the first half of 2003: steel scrap prices continued to rise even though hot-rolled band – the bellwether steel sheet product – was falling in price on the world export market. Then, in mid-2003, hot-rolled band export prices bottomed out at far higher levels relative to steelmakers' costs than was the case in 1985, 1999 and 2001 – when the price fell to “death spiral” levels (i.e., to a level at or below the marginal cost of many steelmakers).

The Age of Discontinuity was also a period of transition for the steel industry from the Old Continuum to the New Continuum. WSD believes that the **New Continuum, which began in 2004, is not a short-term phenomenon**; we expect it to last to about 2025. Here are some of the conditions/characteristics we expect in the New Continuum:

- **Good global steel demand growth** – perhaps on the order of 4% per year, if not more. If so, the period from 2000 to 2025 would be the third longer-term period since 1900 in which there is sizable and fairly continuous global steel demand growth. The other periods were 1900 to 1929 and 1946 to 1974.
- Steel's “Age of Metallics” remains in effect. **A tight supply of steelmakers' metallics** (pig iron, steel scrap and steel scrap substitutes) may be the common condition except during periods of weak steel demand. Why?
 - On the one hand, there will be sharply higher demand for steelmakers' metallics due to the growth of steel consumption. Growth of 4% per annum over a decade adds about 50% to the global demand for steelmakers' metallics – pushing it from about 1.7 billion tonnes in 2007 to about 2.5 billion tonnes in 2017.
 - On the other hand, there are significant limitations to the likely increase in the supply of steelmakers' metallics. For example, due to the difficulty of building “Greenfield” integrated steel plants with blast furnaces outside of China, and the likely retirement of many older blast furnaces, it's not clear that non-Chinese pig iron production will expand in line with needs. In addition, the reservoir of obsolete steel scrap that's 10-40 years old is a limited resource that, globally, will only grow about 2% per annum in the next decade.

(Note: WSD has observed that the supply/demand balance for steelmakers' metallics is just as important a factor in determining global steel industry pricing conditions as the supply/demand balance for steelmaking furnaces or, for that matter, for steel rolling mills.)

WORLDSTEELDYNAMICS

- There will be further substantial concentration of steel companies that are sheet producers. Outside China, the industry already is concentrated in most countries. Inside China, there will be a major consolidation among the larger steel mills – which we have witnessed recently with the combination of two companies into Hebei Steel that now about matches the size of the three other major producers. M&A activity in the steel industry globally will remain quite substantial. Within a few years, we think that at least one of the major Chinese steelmakers will merge with one of their larger offshore competitors.
- New technologies will continue to offer breakthrough cost cutting and product improvement opportunities
- Steel prices will remain highly volatile, especially on the world steel export market. Volatile steel pricing conditions, in part due to violent steel scrap price swings, will keep steel buyers “back on their heels”.
- The steel mills, en masse, when apparent steel demand weakens, will cut back steel production more rapidly than in the past 25 years. Hence, pricing “death spirals” will be far less frequent.
- The inflation in integrated steelmakers’ costs will be only minor after mid-2008 due to declining prices of iron ore and coking coal on the world export market. Also, many integrated mills will be boosting their self-supply of raw materials. Larger steel companies will take actions to maximize output at their most efficient plants.
- Capital spending will remain high in the steel industry reflecting the good steel demand outlook and good profits. One result, besides higher capacity, will be continued gains in labor and materials usage efficiency.
- The U.S. dollar is likely to be stable, if not stronger, versus many currencies except for the Chinese RMB.
- In China, the oversupply of steel products will be largely encapsulated in the country as the government restrains steel exports. The government will suppress exports in order to hold down inflation, give more room for other industries to expand rapidly (steel mills use huge amounts of water, electricity, coking coal and port & railroad capacity) and to reduce pollution. Steel mills in China will be battling: a) ever stricter environmental controls; b) export constraints; and c) a less positive standing in the eyes of governmental policymakers.
- Steel financial/futures transactions become quite prevalent. This will be an important development because it will permit steel buyers and sellers, and also financial investors, to hedge the steel price risk. In steel financial transactions, there is no physical delivery of the steel or steel held in inventory. A liquid futures curve, stretching 12-18 months into the future, will develop. The

WORLDSTEELDYNAMICS

beneficiaries will include the steel mills, steel users and steel middleman companies (traders, steel service centers and processors.).

- Periods of steel pricing setbacks will typically not last for an extended period of time or be unusually deep versus the situation in the 1990s through 2001. For example, today (September 2008), the steel industry is in the midst of a severe, and almost instant, collapse in the prices for both steel products on the world market and steel scrap in the USA (where prices have a profound impact on prices elsewhere in the world). The steel price collapse in 2008 may last only two months – August and September – with prices bottoming out at levels far above the average mill’s marginal cost.
- The steel industry’s cost curve will be steep. Based on WSD’s most recent *World Cost Curve for Steel Sheet Mills*, the operating cost to produce hot-rolled band for a mill at the midpoint in the fourth highest-cost quadrant, at \$775 per tonne, \$255 per tonne above the figure of \$520 per tonne for a mill at the mid-point of the first lowest-cost quadrant.
- Structural imbalances will destabilize the global steel industry – leading to higher prices. For example, the non-Chinese portion of the Developing World steel industry, which currently accounts for about 28% of global steel consumption is short of steelmaking capacity (its imports of steel products have been rising) and it short of steel scrap (a problem that will become even more severe as more steel scrap is consumed in home markets rather than exported – especially in Russia and the USA).
- Global steel trade in the next decade will expand for steel slab, steel billet, pig iron and, perhaps, directly reduced iron. However, it’s not clear that steel scrap trade will grow given the limited supply of scrap and rising scrap usage in a number of regions as noted above.
- Steel mills outside of China are saved from their excessive capital spending – up prodigiously since 2004 – that’s adding substantially to steelmaking and rolling mill capacity by three factors: a) the tight supply of steelmakers’ metallics; b) good global steel demand growth; and c) limits to China’s steel exports.

V. **The improved steel industry prospect is NOT A POSITIVE for the forging industry because one of the characteristics of the New Continuum will be high and volatile steel scrap prices.** For sure, high scrap prices boost the “economic rent” of integrated steel mills that don’t buy much steel scrap; however, unfortunately for the forging industry, it obtains the bulk of its raw material – billet and bar – except in China, from steel-scrap-using electric arc furnace (EAF) based steel plants. In other words, what’s good for the goose – the steel industry – is not necessarily good for the gander – the forging industry. (*Note: For those not well informed on the sex of geese, a gander is a mature male goose.*)

WORLDSTEELDYNAMICS

Massive steel scrap price swings, especially for the prime industrial grades of scrap (even more volatile and unpredictable in price than the obsolete grades) are a major challenge to forging companies since the cost of their raw material often moves in tandem with their suppliers' cost of the prime industrial steel scrap grades. (*Note: Prime industrial steel scrap prices move closely with pig iron and directly reduced iron prices on the world export market.*) One of the forging industry's greatest challenges in the next decade will be coping with the regular, massive and unpredictable swings in its raw material costs. Please consider the following:

- Scrap prices swing so sharply because they are the marginal – consumed last – component of the world's system of steelmakers' metallics. The global metallics requirement for the steel and foundry (not forging) industry in 2007 was about 1.7 billion tonnes. Of this amount, about 660 million tonnes of scrap was consumed – consisting of 162 million tonnes of home scrap, 168 million tonnes of new scrap and 330 million tonnes of obsolete steel scrap.
- It's not clear where a sufficient supply of pig iron outside of China will come from in the next decade for the following reasons: a) Chinese oversupply will be encapsulated; b) there will be only a slow rate of construction of integrated steel plants outside of China; c) no breakthrough coal-based new technologies that will cause a huge new amount of iron ore to be extracted from the iron without the use of coke; and d) the steel scrap reservoir that's 10-40 years old is growing only slowly.
- The scrap reservoir that is 10-40 years old, on average, in 2008 is about 340 million tonnes, or 8.6 billion tonnes aggregated. In the next decade, it may grow 2% per year, composed of 10% in China, -0.2% in the Advanced Countries and 3% in the rest of the Developing World.
- Even worse news for the forging industry is that, when it buys ingot, billet and bar, this product is produced mainly by EAF-based steelmakers that rely on a high proportion of prime industrial steel scrap in their melt.
- During periods of price spikes, the reservoir is temporarily “mined” more rapidly as the easy-to-recover scrap is recovered. This may last about six months, leading to supra-normal recovery – perhaps an extra 100 million tonnes in 2008, WSD theorizes.
- A “wild card” in 2009 is the outlook for steel scrap prices after the massive collapse in the second half of 2008. Will an even higher price be needed to bring out the same supply of obsolete steel scrap since a supra-normal quantity was brought out when the price rose to \$505 per tonne from \$318 per tonne?
- Steelmakers' metallics prices are in a global bathtub – prices vary by region primarily only because of freight costs.

WORLDSTEELDYNAMICS

- The prime industrial scrap grades, which move in price with pig iron, are in particularly tight supply due to the growth of EAF-based steel sheet producers – the mini-sheet mills.
- The obsolete steel scrap recovery rate already is high.
- The history of steel scrap prices in the USA is not encouraging for the forging industry:
 - Prices in the 1990s through early 2003 for #1 heavy melting scrap in the USA ranged from \$70 to \$125 per gross ton. Many thought it would stay there.
 - Prices in 2003-2007 rose from \$105 per ton to \$298 per ton. Again, this was viewed as a top price range.
 - Prices in 2008 rose briefly to \$550 per ton. Steel scrap exports from the USA temporarily surged.
- For forging companies, our contacts indicate that about 80% of their supply of steel products, outside of China, comes from EAF-based steel mills. Products that need high-end metallics – not much in the way of residuals – include SBQ bar, drive shafts, crankshafts, connecting rods and gears.
- The forging industry has huge costs for steel. The operating cost to produce a steel forging might be as follows:
 - Steel at 60%
 - Alloys at 5%
 - Energy at 10%
 - Labor at 10%
 - Dies at 10%
 - Miscellaneous at 5%

VI. **The steel and the forging industries are quite dissimilar even though they serve many of the same markets. They are profoundly different industries.** The steel industry is a basic, or primary, industry. The forging industry is a downstream (from steel's point of view) or a value-added engineered products industry. Steel companies benefit greatly from economy of scale factors, including size and long production runs, because of their high fixed costs. The forging industry in many respects is a job shop industry with relatively low fixed costs.

Based on WSD's assessment in the exhibit titled: "Who's the Most Beautiful of Them All: Forgers or Steelmakers?", let's consider where the steel and forging industries are most different and similar:

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All? The Steel or Forging Industry?

Differences <i>Ranking factor of 1 to 10 varies by 5 or more</i>	Similarities <i>Ranking factor of 1 to 10 varies by 4 or less</i>
<ul style="list-style-type: none"> 1. Size (overall and of the average producer) 2. Industry complexity 5. Concentration of producers high outside of China 7. Fixed costs high 8. Pollution problems take big effort to overcome 11. New technology changing the fact of the industry 12. Cost curve steepness 15. Share of demand in Advanced Countries 16. International trading is high 17. International traders play a major role in industry 20. Middleman companies important 22. Economies of scale are important 23. Capital intensity high 25. Importance of construction market 26. Importance of automotive and aerospace markets 27. BOF steelmaking important 28. EAF steelmaking important 29. Alloying elements high share of cost 30. Energy cost high 31. Trade suits frequent 32. Ocean freight costs critical 33. Price leaders are dominant 36. Prime industrial scrap dependent 41. Government always eyeing pricing 42. Profits dependent on macro industry environment 	<ul style="list-style-type: none"> 3. Price per unit 4. Low concentration of producers in China 6. Lack of concentration producers on the world export market. 9. Safety problems not great 10. Product price volatility is high 13. Unit growth prospects ok 14. M&A activity impacting industry 18. Exchange rate shifts impact large 19. Indirect trade problems 21. Proportion of specialty products delivered is high 24. Labor costs low as a share of operating costs 34. China driving the bus 35. Steel scrap price swings impact costs 37. Location critical 38. Cyclicalities is high 39. Industry profit improvement since 2002 substantial 40. Five-year profit outlook good 43. Opportunity to be a winner based on own actions 44. Management is critical

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All: Forgers or Steelmakers? (1 of 5) (10 = the highest or larger; 1 = the least or smaller)

Item	Steel-maker	Forger	Comment
1. Size	10	3	Global steel product shipments are about 1.4 billion tonnes per year versus the global forging industry of about 20 million tonnes per year. The average steelmaker may ship two to three million tonnes per year; a forger perhaps 20,000-300,000 tonnes per year.
2. Industry complexity	10	5	The global steel industry is immensely complex given the existence of integrated and non-integrated producers, the multi-faceted pricing structure, the huge advantage for those mills with their own raw material sources, the major effort required to combat pollution, ongoing revolutionary new technologies and the rapid changes in the industry's structure. The forging industry is complex especially when it comes to buyer-seller relationships.
3. Price per unit sold	6	10	Forging prices per tonne are higher than most steel finished products due to higher production costs. Also, about 30% of forging deliveries are alloy forgings, which contain expensive items such molybdenum, nickel and chrome.
4. Concentration of producers in China	3	1	There are many hundreds of long product steelmakers and forgers. In the case of hot-rolled band, there are about 35 companies producing this product.
5. Concentration of producers outside of China	8	3	The flat-rolled steel segment of the steel industry tends to be quite concentrated in most non-Chinese countries/regions. This is not the case in the forging industry.
6. Concentration of key players on the world export market	4	2	More than 100 steel mills at times export billet, slab or their finished product. Exports of forgings are often contained as a component of a manufactured good.
7. Fixed costs are high	8	3	Steel mills, especially integrated ones (i.e., those with blast furnaces) have high fixed costs. Forging producers tend to have lower fixed costs.
8. Pollution problems hard to overcome	9	4	Steel mills face far greater expenses and complexity when seeking to combat air and water pollution.

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All: Forgers or Steelmakers? (2 of 5) (10 = the highest or larger; 1 = the least or smaller)

Item	Steel-maker	Forger	Comment
9. Safety problems are severe	3	3	It's dangerous to work in a steel plant or a forging plant but safety procedures are good in most countries. Safety and pollution standards vary greatly worldwide in both industries.
10. Price volatility is high	8	5	Steel pricing structure is highly complex and volatile. At the same time, oligopolistic and/or quasi-oligopolistic pricing tendencies are far more prevalent in the steel business.
11. New technologies changing the face of the industry	9	3	New technologies impact virtually all aspects of the steel production and rolling process. Not the case for forging industry.
12. Cost curve is steep	10	4	The steel industry cost curve is very steep due in part to the huge difference in costs for those steel mills that own, or don't own, their own raw materials. Steel mills that purchase steel slab, when slab prices are high, have ultra-high costs. The cost of the last tonne is high in the steel business.
13. Unit growth prospects is good	6	4	The steel industry is tied more to Developing World steel demand (about 60% of the total). In the forging industry, perhaps only about 40% of the total.
14. Merger and acquisition activity impacting industry	10	5	Massive activity in the steel business since 2002. Sizable activity in the forging industry.
15. Share of global demand is high in the Advanced Countries	3	8	The forging industry ties importantly to the automotive and aerospace industry (USA particularly), which are most prominent in Advanced Countries.
16. International trading activity is high	9	4	About one-third of the steel produced in the world is traded internationally. In the forging industry, direct exports may be only 5-10% of the total. However, a sizable amount of steel, and forgings, are exported as a component of finished manufactured products.
17. Role for international traders is huge	10	2	International traders play a huge role in the steel industry. In China, there may be as many as 180,000 steel traders.
18. Impact of foreign exchange rate shifts is profound	9	7	For both industries, the weaker the home currency, the lower the production cost and the lessened the vulnerability to offshore competition.

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All: Forgers or Steelmakers? (3 of 5)

(10 = the highest or larger; 1 = the least or smaller)

Item	Steel-maker	Forger	Comment
19. Indirect trade in steel or forgings is a problem	6	7	In steel, imports or steel in steel-containing goods is a threat. In forgings, it's manufactured products containing forgings that's the problem.
20. Role for middleman companies is substantial	9	2	About 40% of the steel produced in the world does not go directly to the user; it is shipped to steel service centers, processors and traders. For the forging industry, most of the product goes directly to the end user.
21. Overall proportion of specialty products is high	3	6	Specialty products, as a share of total deliveries, may be higher for the forging industry.
22. Economies of scale are substantial	9	3	A steel mill often needs to be almost three million tonnes in size to minimize production costs.
23. Capital intensity is high	9	4	A new integrated steel plant with extensive finishing equipment can cost \$1,500 or more per tonne. The steel industry is more capital intensive than the forging industry.
24. Labor costs are low as a share of operating costs	8	7	The surge of raw material costs and vast improvements in labor productivity have sharply reduced labor costs in the steel business the past 50 years. Labor costs low in forgings due to the high cost of the steel.
25. Construction market is important	8	3	About 40% of the steel produced in the world ties to the construction industry. The figure in the forging industry might be 10% of the total.
26. Automotive and aerospace markets are important	5	10	About 20% of steel sold globally ties to consumer durables, and only a minor amount to aerospace applications. The combined figure for the forging industry in an advanced country can be 50% of the total.
27. Importance of BOF steelmaking (and/or, as a supplier to the forging industry)	8	3	About 54% of the steel produced in the non-Chinese world is via the BOF process. In China, it's about 90% of the total (often via many small blast furnaces and BOF steelmaking furnaces).
28. Importance of EAF steelmaking (and/or as a supplier of product to the forging industry)	4	9	Much of the raw materials for the forging industry come from EAF steelmakers.

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All: Forgers or Steelmakers? (4 of 5) (10 = the highest or larger; 1 = the least or smaller)

Item	Steel-maker	Forger	Comment
29. Alloying elements a high share of costs	3	8	A higher proportion of forging deliveries are specialty and alloy products.
30. Energy cost is high	9	4	Steel plants use huge quantities of energy. Figure only minor for forgers as a share of total costs.
31. Trade suits are frequent - including anti-dumping and countervailing duty actions	8	2	Trade actions are a continuing, and important, part of the steel industry landscape. Chinese governmental officials fear trade actions in steel. Trade actions in forged products are rare.
32. Ocean freight costs are critical	8	2	A huge factor in the steel business given the vast amount of iron ore and coking coal that is shipped via ocean freight. Perhaps about 20% of the steel produced in the world is shipped via the oceans.
33. Dominant price leaders exist	8	3	Price leaders in the steel industry located in most countries – including BaoSteel in China.
34. China is driving the industry's bus	10	6	One might say that China drives the steel industry's bus. It also a key element of the global forging industry.
35. Impact on costs of steel scrap price swings	6	9	About 35% of global steel output is produced via the EAF route. However, in the forging industry's case, much of the raw material is produced via the EAF route; hence, the cost of the "substrate" has huge swings.
36. Dependence on prime industrial scrap versus obsolete steel scrap	3	8	Prime industrial scrap, in the steel industry, is used by integrated steelmakers in as part of the metallics charge in the BOF, and by EAF steelmakers that make <u>sheet</u> products and/or <u>special quality</u> bar products. Prime industrial scrap prices at times sell at huge premiums to obsolete steel scrap prices – briefly at a peak spread of about \$430 per tonne in July 2008.
37. Location/geography is critical	10	9	Location is extremely important – both in terms of the assembly of raw materials in the steel industry and the shipment to customers in both the steel and the forging industries.
38. Cyclicalities is high	8	6	The steel industry is highly cycle. So is the forging industry due to the tie-in to the automotive and machinery industries.
39. Profit performance greatly improved since 2002	10	9	Perhaps more substantial in steel since some mills are benefiting from control of their own raw materials.

WORLDSTEELDYNAMICS

Who's The Prettiest of Them All: Forgers or Steelmakers? (5 of 5) (10 = the highest or larger; 1 = the least or smaller)

Item	Steel-maker	Forger	Comment
40. Five-year profit outlook appears favorable	8	5	For steel mills that produce sheet products, the outlook appears favorable due to positive steel demand prospects, substantial industry concentration, shortage of metallics and restricted Chinese steel exports.
41. Governmental involvement in pricing is high	7	2	Governments the world over are highly sensitive to steel price changes because they are so worried about inflation. Steel prices are currently being suppressed in South Korea and India.
42. Profits depend largely on the <u>macro</u> industry environment	7	2	The overall industry environment probably has a greater impact on steel companies than forging companies.
43. Opportunity for individual firms to be "winners" based on their own actions.	7	9	WSD since 2002 has identified about 25 "world-class" steelmakers that have been good performers almost no matter what the industry environment.
44. Management is critical	10	10	Management makes a huge difference in the steel and forging companies.

VII. Can forging companies find a way to hedge the steel scrap price risk?

Looking ahead about a year, WSD thinks that the answer may be "yes" for the obsolete grades of steel scrap, such as shredded or #1 heavy melting scrap. However, we don't see an opportunity to price hedge the prime industrial grades because the price changes for this type of scrap can be so monumental – such as the possible \$400 per gross ton decline in USA prime industrial (automotive) grades from mid-July 2008 to early September 2008.

WSD is hopeful that a financial trading in obsolete steel scrap prices may develop by early 2009. In a financial transaction, there is no physical delivery of the scrap, nor any held in inventory. A liquid futures curve for steel scrap prices would permit forging companies to hedge somewhat their steel-related raw material costs. We say "somewhat" because the price hedge opportunity would probably not exist for the prime industrial grades.

WORLDSTEELDYNAMICS

Global Income Shift Paradigm - Summary Results

Region/ Country	Real GDP Growth 2002- 2007	Real GDP Growth 2007- 2017 <u>Mid-Low</u>	Real GDP Growth 2007- 2017 <u>Mid-High</u>	Ratio: Real Investment to GDP 2002	Ratio: Real Investment to GDP 2007	Ratio: Real Investment to GDP 2017 <u>Mid-Low</u>	Ratio: Real Investment to GDP 2017 <u>Mid-High</u>
Advanced	2.4%	1.8%	2.5%	19.9%	21.1%	21.0%	22.1%
China	10.4%	6.0%	7.5%	35.2%	43.2%	46.0%	49.0%
ROW	6.0%	5.5%	7.0%	21.9%	25.1%	29.0%	33.0%
Total	4.7%	3.9%	5.0%	22.4%	26.0%	29.0%	31.9%

	Real Investment Growth 2002-2007	Real Investment Growth 2007-2017 <u>Mid-Low</u>	Real Investment Growth 2007-2017 <u>Mid-High</u>	Real GDP World Shares 2002	Real GDP World Shares 2007	Real GDP World Shares 2017 <u>Mid-Low</u>	Real GDP World Shares 2017 <u>Mid-High</u>
Advanced	3.6%	1.8%	3.0%	56.2%	50.4%	41.2%	39.4%
China	15.0%	6.7%	8.9%	12.3%	16.0%	19.6%	20.2%
ROW	8.9%	7.0%	10.0%	31.5%	33.6%	39.2%	40.4%
Total	7.8%	5.0%	7.2%	100.0%	100.0%	100.0%	100.0%

	Apparent Steel Demand Growth 2002-2007	Apparent Steel Demand Growth 2007-2017 <u>Mid-Low</u>	Apparent Steel Demand Growth 2007-2017 <u>Mid-High</u>	Apparent Steel Consumption/ Billion \$ GDP 2002	Apparent Steel Consumption/ Billion \$ GDP 2007	Apparent Steel Consumption/ Billion \$ GDP 2017 <u>Mid-Low</u>	Apparent Steel Consumption/ Billion \$ GDP 2017 <u>Mid-High</u>
Advanced	2.2%	1.7%	2.2%	17,877	17,662	17,531	17,227
China	18.8%	4.9%	8.4%	33,106	47,768	43,171	52,056
ROW	8.7%	6.7%	9.5%	17,712	20,029	22,517	25,307
Total	8.2%	4.4%	6.8%	19,696	23,287	24,521	27,529

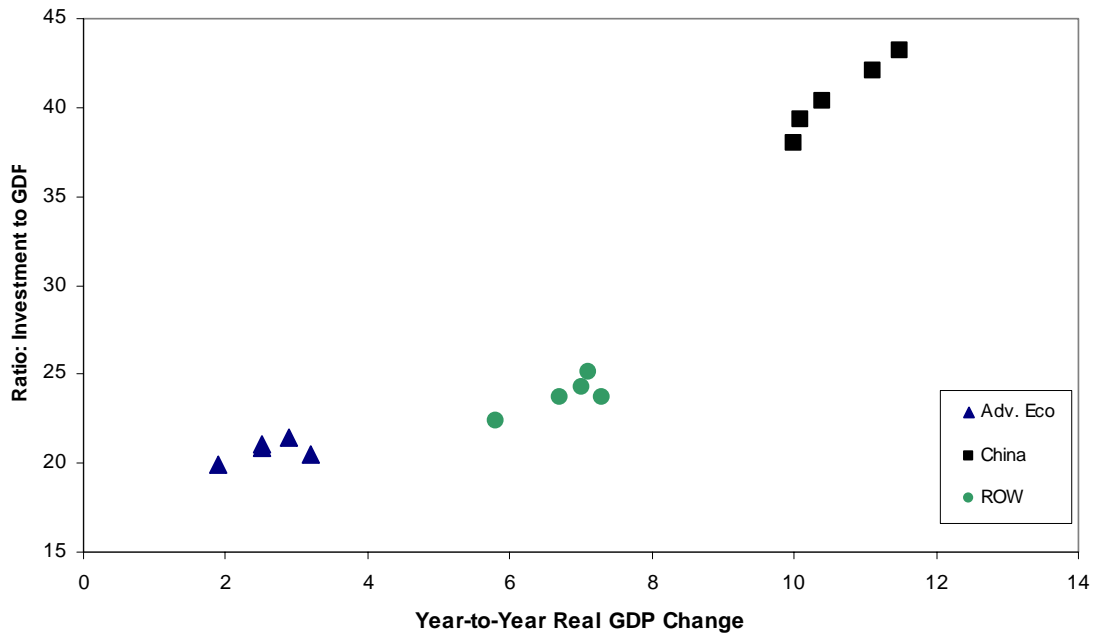
	Per Capita Apparent Steel Consumption Growth 2002-2007	Per Capita Apparent Steel Consumption Growth 2007-2017 <u>Mid-Low</u>	Per Capita Apparent Steel Consumption Growth 2007-2017 <u>Mid-High</u>	Apparent Steel Consumption/ Billion \$ Investment 2002	Apparent Steel Consumption/ Billion \$ Investment 2007	Apparent Steel Consumption/ Billion \$ Investment 2017 <u>Mid-Low</u>	Apparent Steel Consumption/ Billion \$ Investment 2017 <u>Mid-High</u>
Advanced	1.5%	1.1%	1.6%	89,830	83,704	83,480	77,951
China	18.2%	4.3%	7.8%	94,005	110,602	93,850	106,237
ROW	6.9%	5.1%	7.8%	80,753	79,801	77,643	76,687
Total	6.9%	3.1%	5.5%	87,837	89,611	84,421	86,196

Economic Fission

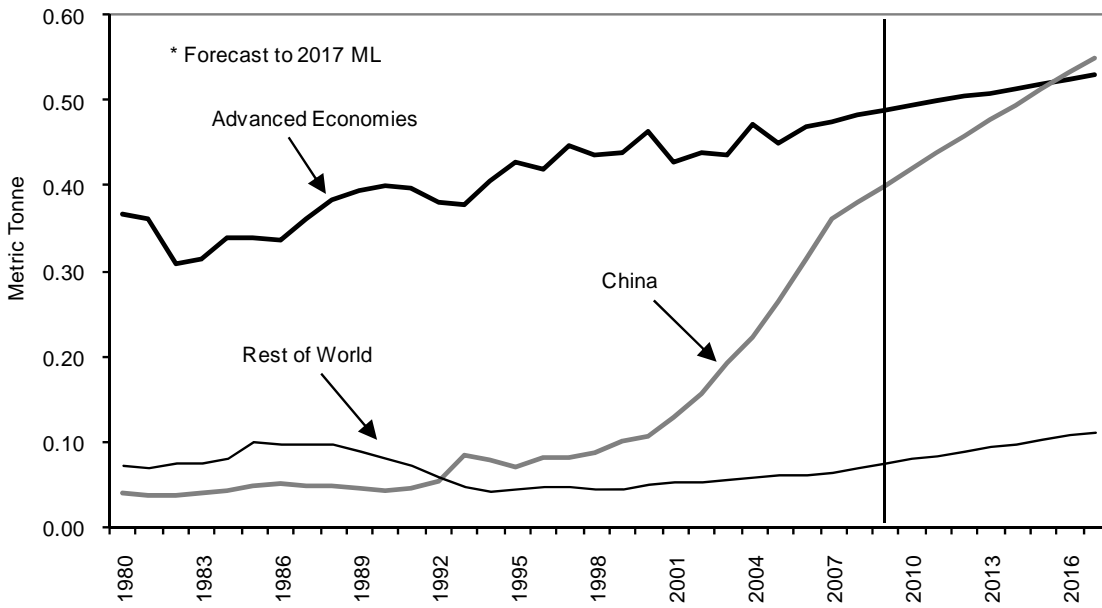
A process whereby sub-critical elements are mixed together in a particular region of the world. Examples of sub-critical elements are rising fixed asset investment, increasing trade and currency shifts. When combined, the consequence is a nuclear reaction; i.e., faster economic expansion.

WORLDSTEELDYNAMICS

Ratio of Investment to GDP & Real GDP Growth



Three Regions: Per Capita ASC



WORLDSTEELDYNAMICS

Global GDP Components, Growth and Related Items: 2002 to 2007 (1 of 4)

Item	Advanced Economies	China	ROW	Global
Real GDP growth: 2002-2007	2.6%	10.6%	6.8%	4.9%
Export growth: 2002-2007	13.5%	29.2%	20.8%	16.0%
Imports: Share of GDP in 2007	29.7%	28.4%	36.0%	31.0%
Gross fixed capital formation to GDP: 2007	19.9%	39.4%	22.6%	23.9%
Government consumption to GDP: 2007	17.6%	13.3%	15.4%	16.2%
Household consumption to GDP: 2007	64.0%	35.6%	54.3%	56.2%
Fixed asset investment: 2007 \$ billions	\$5,671	\$3,697	\$4,496	\$13,864
Share of global investment: 2007	40.9%	26.7%	32.4%	100%
Share of global investment: 2002	49.9%	19.3%	30.8%	100%
Investment growth: 2002-2007	3.6%	15.0%	9.0%	7.8%
Savings to GDP: 2007	19.9%	49.9%	28.7%	27.7%
Agriculture to GDP: 2007	1.2%	11.7%	7.6%	5.0%
Industrial sector to GDP: 2007	23.2%	49.2%	38.6%	32.5%
Services to GDP: 2007	75.6%	39.1%	53.7%	62.4%
Weighted currency value appreciation vs. U.S. dollar: 2002-2007	23.4%	9.1%	30.0%	
Average inflation rate: 2002-2007	2.1%	2.6%	5.2%	3.7%
Trade growth: 2002-2007	13.5%	29.3%	20.8%	16.0%
Inflation rate: 2007	2.1%	4.5%	6.1%	3.9%
Share of global GDP on a PPP basis: 2007	50.4%	16.0%	33.6%	100%
Share of global GDP on a PPP basis: 2002	56.2%	12.3%	31.5%	100%

WORLDSTEELDYNAMICS

Global GDP Components, Growth and Related Items: 2002 to 2007 (2 of 4)

Item	Advanced Economies	China	ROW	Global
Million tonnes HRBeq consumption: 2007	274.0	188.5	179.2	641.7
HRBeq consumption 2007: Share of World	42.7%	29.4%	27.9%	100%
Million tonnes LPeq consumption: 2007	205.3	224.2	177.2	606.7
LPeq consumption 2007: Share of World	33.8%	37.0%	29.2%	100%
Million tonnes total EQ consumption: 2007	479.3	412.7	356.4	1,248.4
Total EQ consumption 2007: Share of World	38.4%	33.1%	28.5%	100%
Total EQ consumption growth per annum: 2002-2007	2.1%	19.0%	9.1%	8.3%
Total EQ consumption in tonnes per billion \$ of real GDP: 2007	17,833	48,212	19,895	23,399
Total EQ consumption in tonnes per billion \$ of real GDP: 2002	18,145	33,106	17,271	19,708
Total EQ consumption in tonnes per billion \$ of fixed asset investment: 2007	84,515	111,630	79,267	90,044
Total EQ consumption in tonnes per billion \$ of fixed asset investment: 2002	91,179	94,005	78,742	87,890
Steel consumption (tonnes) per billion \$ of investment: 2017ML	83,480	93,850	77,643	84,421
Steel consumption (tonnes) per billion \$ of investment: 2017MH	77,951	106,237	76,687	86,196
Population in billions: 2007	0.983	1.321	4.220	6.524
Population growth: 2002-2007	0.6%	0.6%	1.6%	1.2%
Oil share of energy consumption: 2007	55.2%	9.3%	35.5%	100%
Oil consumption: 2007 (Thousand Barrels per Day)	47,294	7,855	30,071	85,220

WORLDSTEELDYNAMICS

Global GDP Components, Growth and Related Items: 2002 to 2007 (3 of 4)

Item	Advanced Economies	China	ROW	Global
Oil consumption: 2007 (MT Oil Equivalent)	2,183	368	1,402	3,953
Coal share of energy consumption: 2007	34.7%	41.3%	24.0%	100%
Coal consumption: 2007 (Million MT)	1,654	1,967	1,146	4,766
Coal consumption: 2007 (MT Oil Equivalent)	1,102	1,311	764	3,178
Natural gas share of energy consumption: 2007	46.1%	2.3%	51.6%	100%
Natural gas consumption: 2007 (Billion Cubic Meters)	1,343	67	1,511	2,922
Natural gas consumption: 2007 (MT Oil Equivalent)	1,217	61	1,360	2,638
Hydro share of energy consumption 2007:	39.6%	15.4%	45.0%	100%
Hydro energy consumption: 2007 (Twh)	1,241	483	1,410	3,134
Hydro energy consumption: 2007 (MT Oil Equivalent)	281	109	319	709
Nuclear share of energy consumption 2007:	82.8%	2.3%	14.9%	100%
Nuclear energy consumption: 2007 (Twh)	2,275	63	411	2,749
Nuclear energy consumption: 2007 (MT Oil Equivalent)	515	14	93	622
CO2 emissions: 2007 (million T CO2)	13,206	7,210	10,894	31,311
CO2 emissions in 2007: Share of world	42.2%	23.0%	34.8%	100%
CO2 Emissions (million T CO2) per billion \$ of 2007 GDP on a purchasing power parity basis	0.49	0.84	0.61	0.59
Cement production: 2007 (1,000 MT)	760,400	1,300,000	546,000	2,606,400
Cement production 2007: Share of world	29.2%	49.9%	20.9%	100%

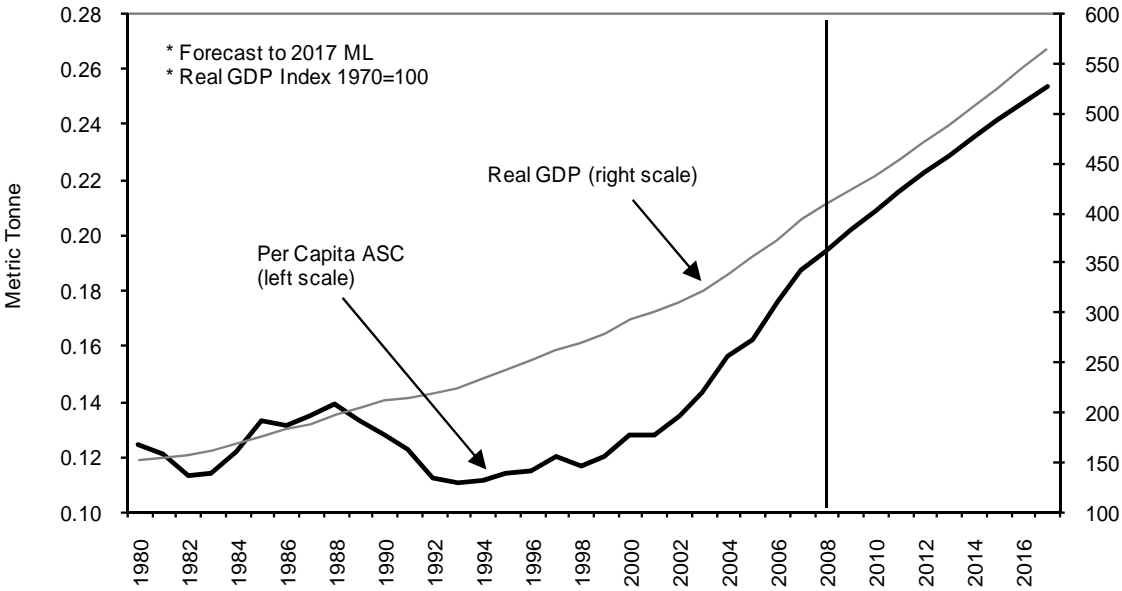
WORLDSTEELDYNAMICS

Global GDP Components, Growth and Related Items: 2002 to 2007 (4 of 4)

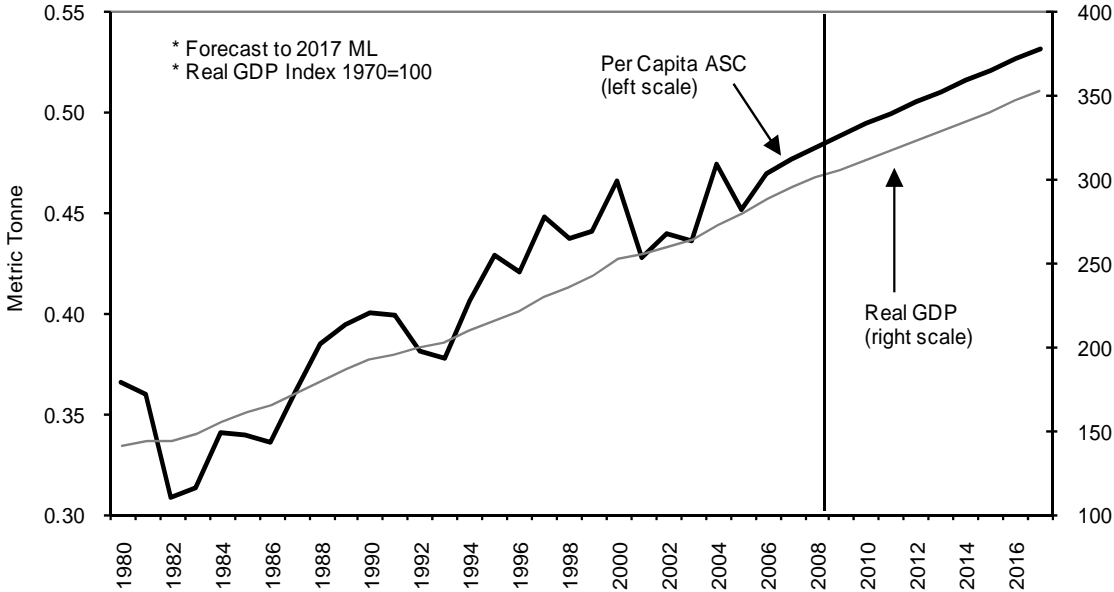
Item	Advanced Economies	China	ROW	Global
2007-2017 FORECAST MID-LOW				
Real GDP 2007-2017 growth per annum.	1.8%	6.0%	5.5%	3.7%
Fixed asset investment 2007-2017 growth per annum	1.8%	6.7%	7.0%	5.0%
Total EQ consumption million tonnes: 2007-2107 growth per annum	1.6%	4.8%	6.8%	4.4%
Total EQ consumption 2017 million tonnes	563.2	661.8	689.0	1,914.0
2007-2017 FORECAST MID-HIGH				
Real GDP 2007-2017 per annum.	2.5%	7.5%	7.0%	4.8%
Fixed asset investment 2007-2017 per annum	3.0%	8.9%	10.0%	7.2%
Total EQ consumption million tonnes: 2007-2107 per annum compounded	2.1%	8.3%	9.6%	6.8%
Total EQ consumption 2017 million tonnes	592.7	918.4	891.8	2,402.9
Real GDP per capita in US\$: 2007	27,334	6,482	4,245	8,178
Fixed asset investment per capita in US\$: 2007	5,767	2,799	1,066	2,125

WORLDSTEELDYNAMICS

World: Per Capita ASC vs. Real GDP

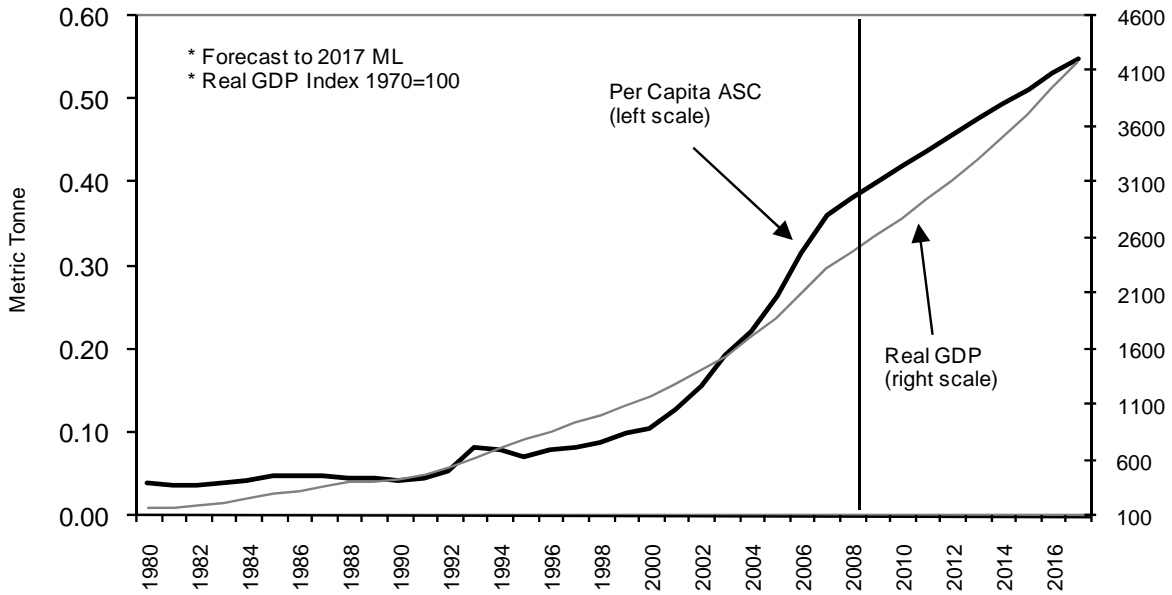


Advanced Economies: Per Capita ASC vs. Real GDP

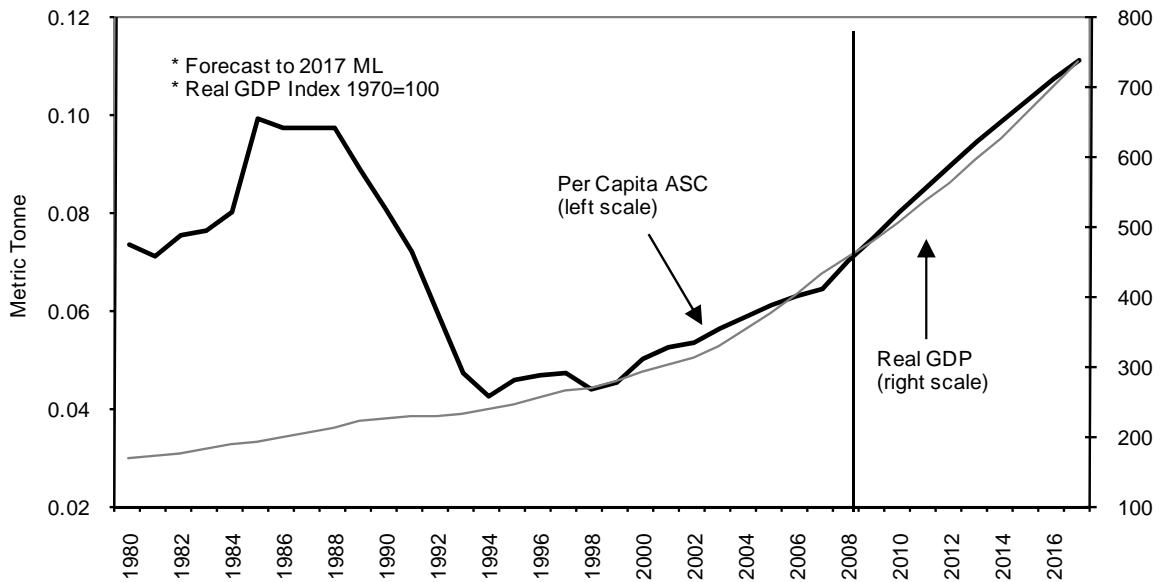


WORLDSTEELDYNAMICS

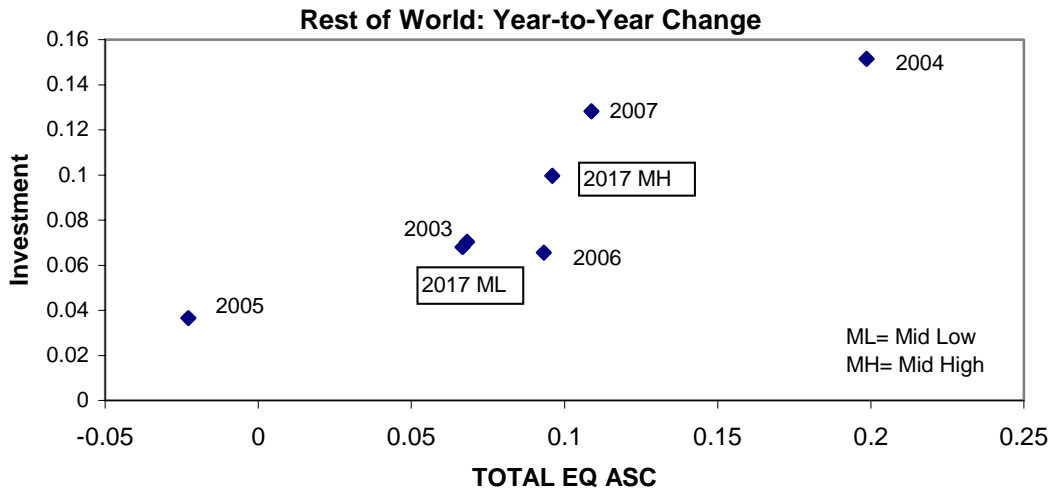
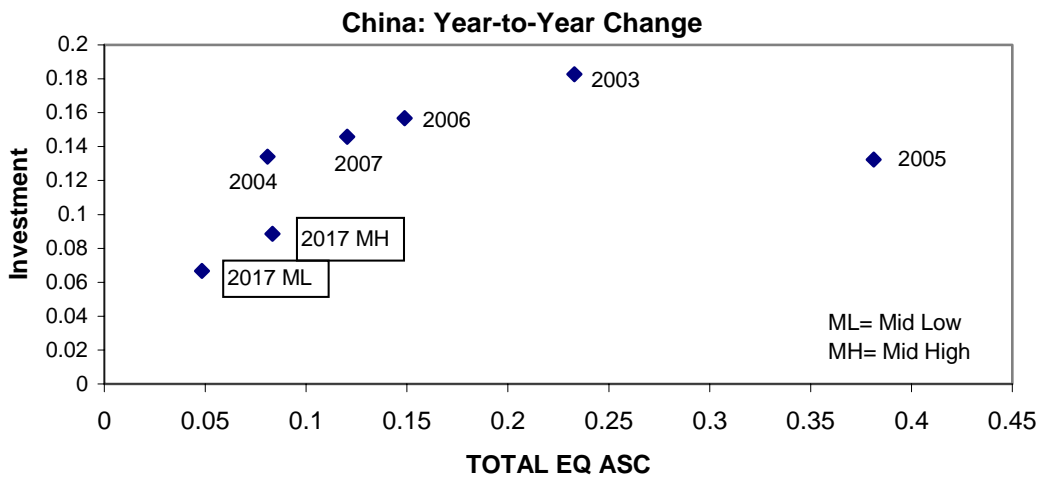
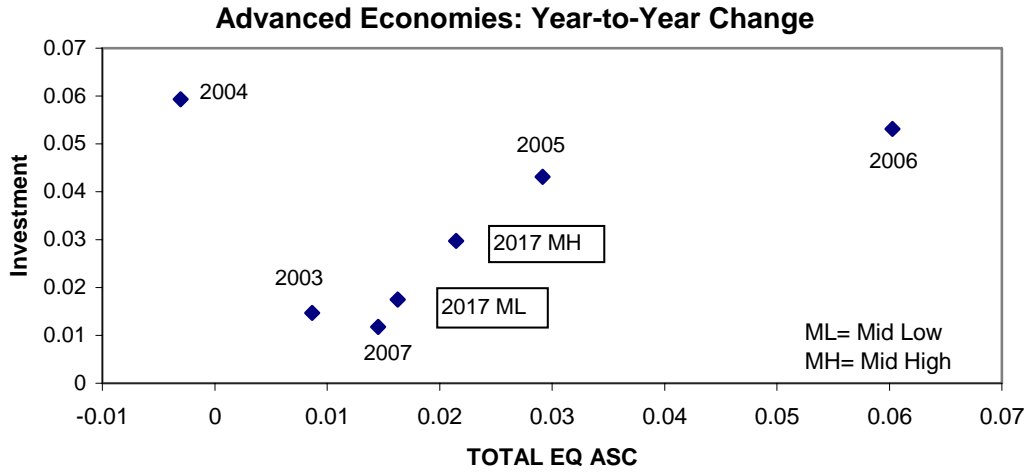
China: Per Capita ASC vs. Real GDP



Rest of World: Per Capita ASC vs. Real GDP

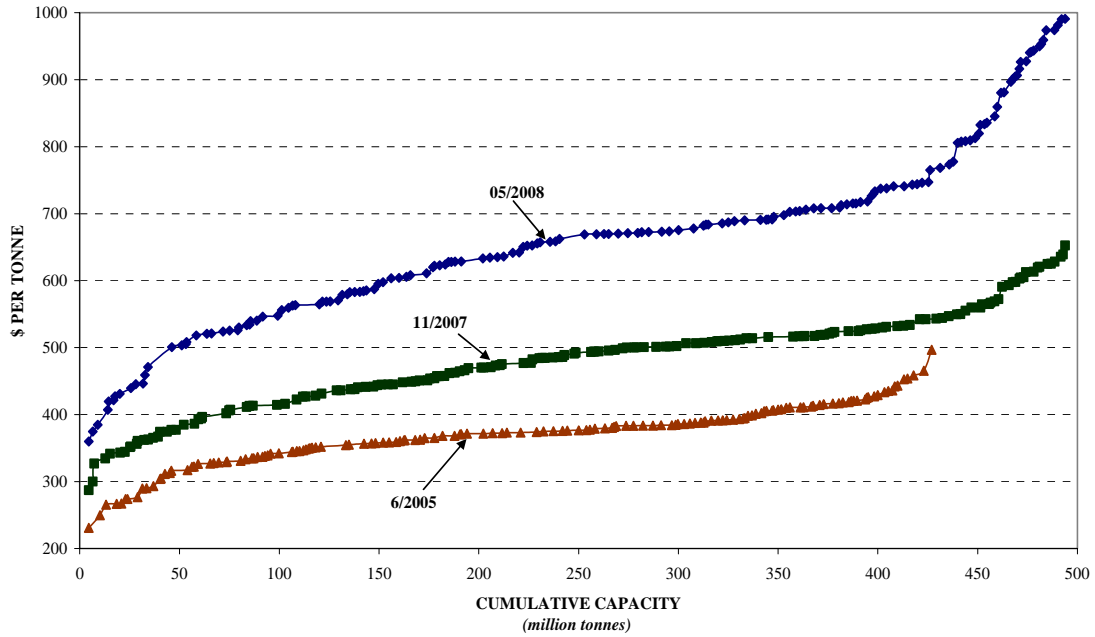


WORLDSTEELDYNAMICS

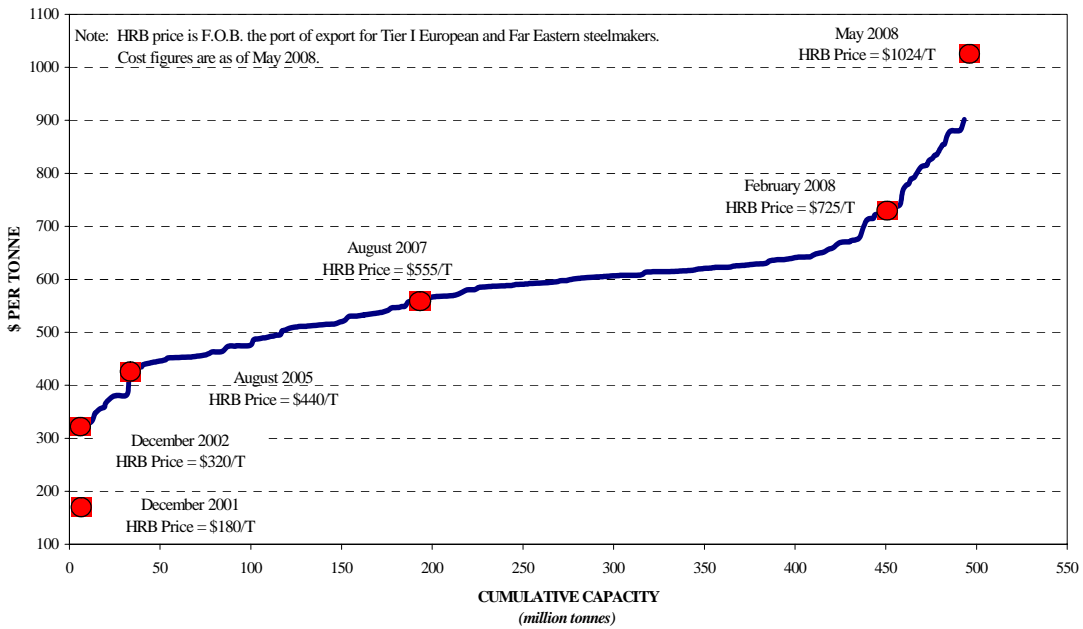


WORLDSTEELDYNAMICS

**WSD 2008 versus 2007 and 2005 World Cost Curve for Sheet Producers
Hot Rolled Band Operating Costs including Overhead**

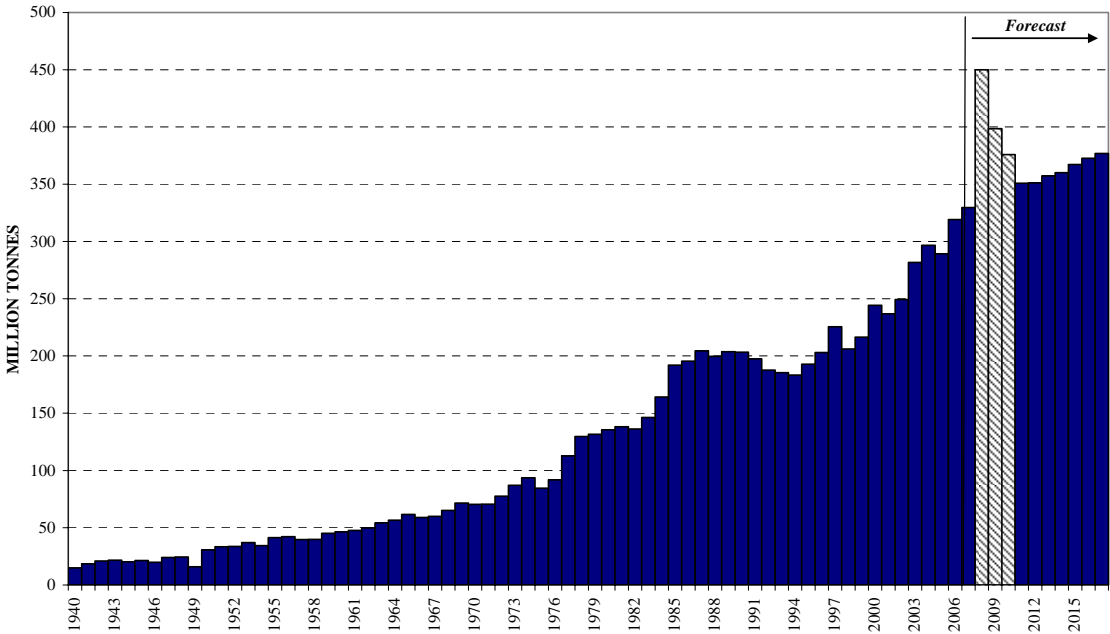


**WSD World Cost Curve for Sheet Producers
Hot-Rolled Band Marginal Cost as of May 2008 versus Price**

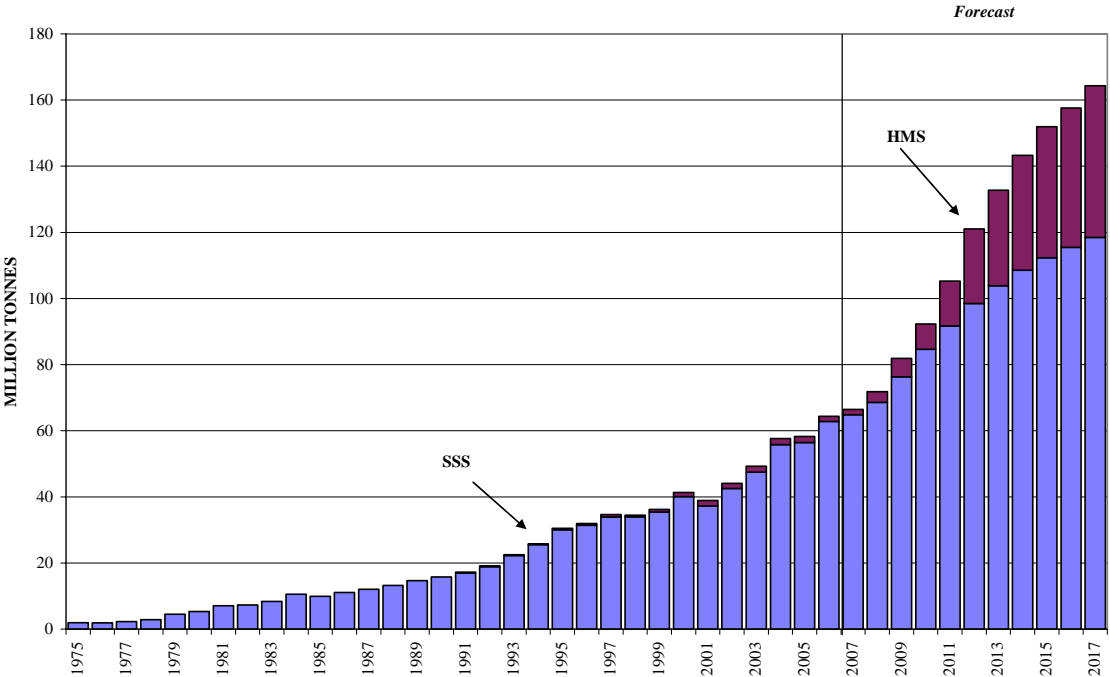


WORLDSTEELDYNAMICS

Global Metallics Balance System Estimate of Obsolete Scrap Recovery Needed to Balance the System to 2017 Plus Additional Recovery Due to Scrap Price Spike 2008-2010

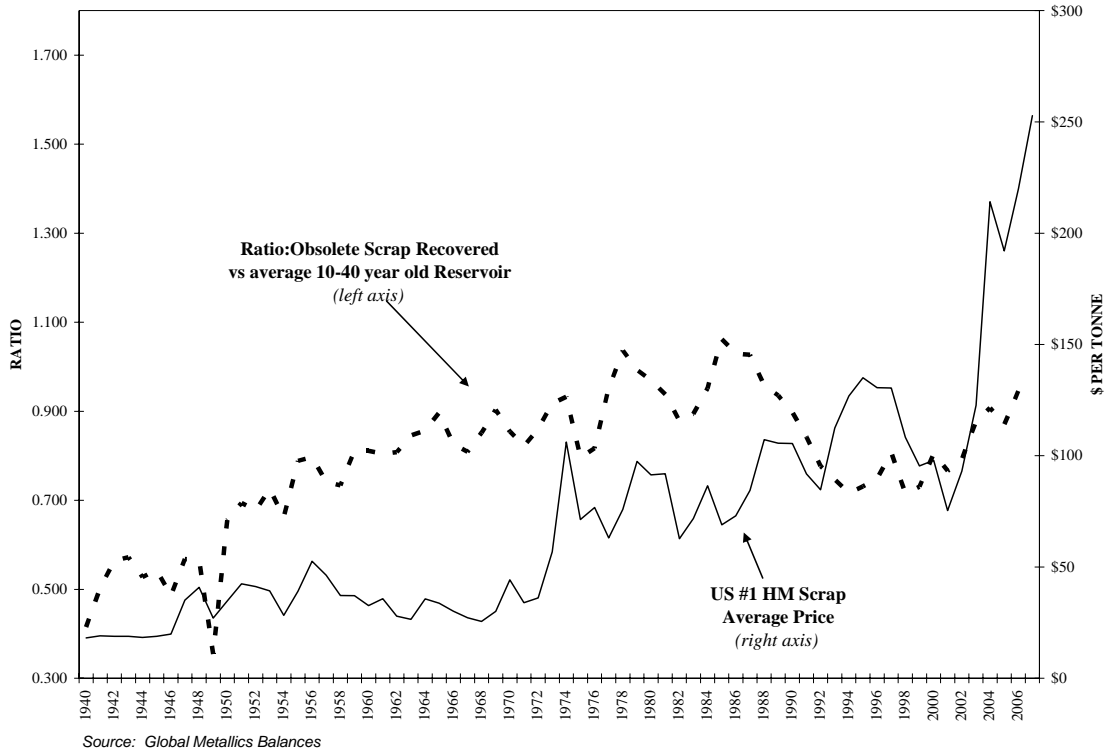


Steel Scrap Substitute and Hot Metal Substitute Requirements

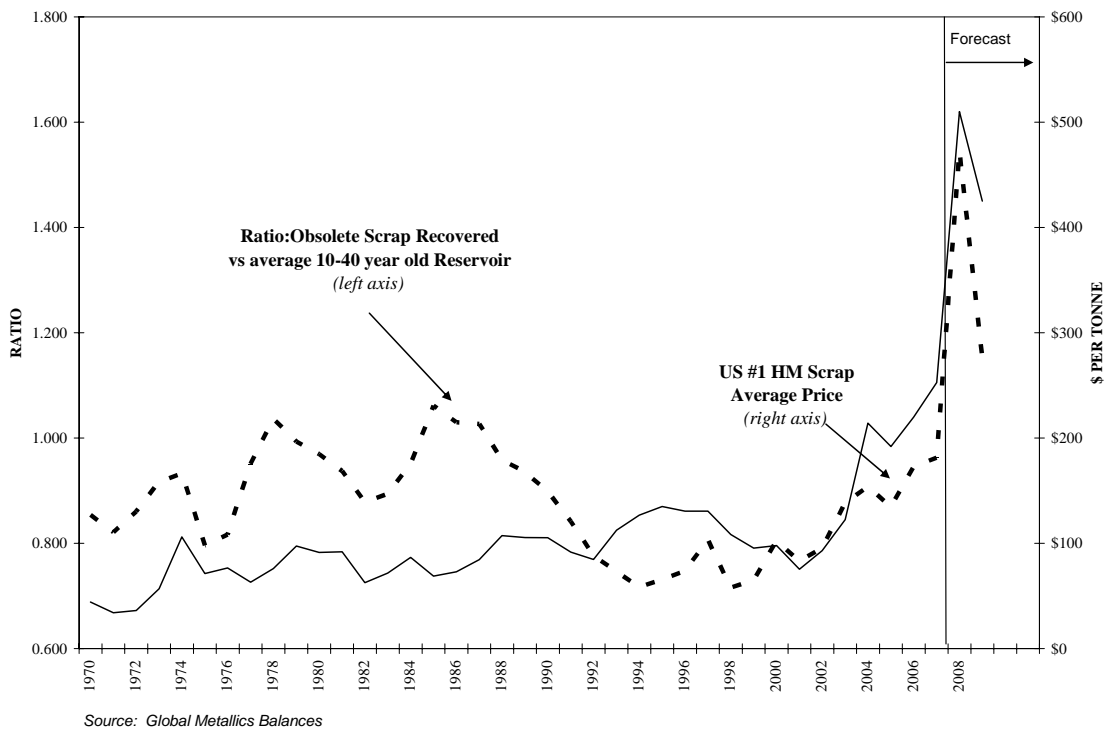


WORLDSTEELDYNAMICS

Global Obsolete Scrap Recovery Ratio versus USA #1HM Scrap Price



Global Obsolete Scrap Recovery Ratio versus USA #1HM Scrap Price



WORLDSTEELDYNAMICS

World Steelmakers' Metallics Relationships

million tonnes, unless otherwise specified

	2006	2007	2008	2017	CAGR 2006-2017	% '08 v '07
Crude x 0.927 = Finished Product EQ	1159.1	1246.1	1391.0			
Less: Net Import of Semis	0.0	0.0	0.0			
Less: Net Import of Finished Product	0.0	0.0	0.0			
Apparent steel consumption (EQ)	1,159.1	1,246.1	1,391.0	1,749.4	3.81%	11.62%
Crude steel production	1,250.4	1,344.3	1,500.5	1,870.3	3.73%	11.62%
Ratio to ASC (EQ)	1.079	1.079	1.079	1.069		
Per annum change from prior period (%)				3.1%		
BOF Steel Production	825.3	899.6	960.0	1335.8	4.47%	6.72%
Per annum change from prior period (%)				8.4% 0.714		
OH (and all prior to 1975) prod'n	32.1	28.6	25.5	0.0		-10.84%
Per annum change from prior period (%)						
EAF steel production	394.1	412.9	515.0	534.5	2.81%	24.74%
Per annum change from prior period (%)	32%	31%		6%		
Foundry production	68.4	70.1	72.0	87.5	2.26%	2.78%
Ratio to Crude Steel	0.055	0.053	0.052	0.047		
Per annum change from prior period (%)				2.2%		
Pig iron requirement	881.1	946.7	996.0	1,366.9	4.07%	5.21%
Per annum change from prior period (%)				3.2%		
Ratio to BOF production	1.068	1.052	1.038	1.023		
Metallics requirement	1588.6	1703.1	1892.1	2322.3	3.51%	11.09%
Ratio: Metallics/Crude+Foundry	1.205	1.204	1.203	1.264		
HMS (hot metal substitute) requirement	1.5	1.6	3.2	45.9	36.14%	105.76%
Per annum change from prior period (%)				15.2%		
SSS requirement (includes use in BF)	62.8	64.9	70.0	118.5	5.93%	7.93%
Per annum change from prior period (%)				3.8%		
Ratio HMS+SSS to EAF output	0.16	0.16	0.14	0.22		
Steel scrap requirement	643.1	690.0	822.8	820.0	2.23%	19.25%
Per annum change from prior period (%)				2.1%		
Of which: Home scrap generated	173.7	186.8	207.7	213.7	1.90%	11.18%
Ratio to Crude Steel + Foundry production	0.132	0.132	0.132	0.109		
Per annum change from prior period (%)				2.4%		
Of which: New scrap generated	134.0	139.8	161.8	229.4	5.01%	15.76%
Ratio to ASC	0.116	0.112	0.116	0.131		
Per annum change from prior period (%)				2.9%		
Obsolete scrap requirement (includes use in BF)	335.4	363.4	453.3	377.0	1.07%	24.75%
Ratio to 10-40 yrs avg reservoir	0.994	1.061	1.301	0.875		
10-40 yrs avg obsolete scrap reservoir	337.3	342.4	348.5	431.0	2.25%	
Per annum change from prior period (%)				2.8%		
Recovery Ratio	99.4%	106.1%	130.1%			

WORLDSTEELDYNAMICS

Advanced Economies Steelmakers' Metallics Relationships

million tonnes, unless otherwise specified

	2006	2007	2008	2017	CAGR 2006-2017	% '08 v '07
Crude x 0.927 = Finished Product EQ	448.8	457.6	509.9			
Less: Net Import of Semis	13	12	15			
Less: Net Import of Finished Product	8	7	7			
Apparent steel consumption (EQ)	469.8	476.6	531.9	509.1	0.73%	11.60%
Crude steel production	484.1	493.6	550.0	537.5	0.96%	11.43%
Ratio to ASC (EQ)	1.031	1.036	1.034	1.056		
BOF Steel Production	281.0	287.6	295.0	255.3	-0.87%	2.57%
Per annum change from prior period (%)				-2.4%		
OH (and all prior to 1975) prod'n	0.0	0.0	0.0	0.0	0.00%	
Per annum change from prior period (%)						
EAF steel production	203.0	206.0	255.0	201.1	-0.09%	23.79%
Per annum change from prior period (%)				0%		
Foundry production (F)	28.4	28.4	28.0	32.4	1.21%	-1.41%
Per annum change from prior period (%)				6.9%		
Total Metallics Requirement	615.5	621.2	682.0	671.1	0.79%	9.80%
Ratio: Metallics/Crude+Foundry	1.201	1.190	1.180	1.178		
Sources of Metallics						
Pig iron production (P)	268.5	273.4	282.1	275.2	0.22%	3.18%
Ratio to BOF production	0.956	0.951	0.956	-15.9%		
HMS (hot metal substitute) production	0.3	0.3	0.6	21.7	49.92%	128.78%
Per annum change from prior period (%)				45.9%		
SSS demand	7.5	8.2	0.7	12.7	4.97%	-91.80%
Ratio to EAF output	0.04	0.04	0.00	0.06		
				34.4		
Steel scrap generated	335.0	337.1	389.4	368.0	0.86%	15.53%
Per annum change from prior period (%)				14.6%		
Of which: Home scrap generated	62.5	63.7	70.5	79.0	2.14%	10.73%
Ratio to Crude Steel + Foundry production	0.122	0.122	0.122			
Of which: New scrap generated	67.6	65.9	73.4	69.2	0.22%	11.30%
Ratio to ASC	0.144	0.138	0.138			
Obsolete scrap needed (derived)	204.9	207.4	270.1	219.8	0.64%	30.23%
Ratio to 10-40 yrs avg reservoir	1.022	1.037	1.345	1.123		
10-40 yrs avg obsolete scrap reservoir	200.5	200.0	200.9	195.7	-0.22%	
Recovery Ratio	102.2%	103.7%	134.5%	28.1%		

WORLDSTEELDYNAMICS

Chinese Steelmakers' Metallics Relationships

million tonnes, unless otherwise specified

	2006	2007	2008	2017	CAGR 2006-2017	% '08 v '07
Crude x 0.927 = Finished Product EQ	391.8	453.3	500.6			
Less: Net Import of Semis	-8	-6	-1			
Less: Net Import of Finished Product	-28	-46	-30			
Apparent steel consumption (EQ)	355.8	401.3	469.6	729.4	6.74%	17.01%
Crude steel production	422.7	489.0	540.0	847.5	6.53%	10.43%
Ratio to ASC (EQ)	1.188	1.219	1.150	1.162		
BOF Steel Production	378.7	440.5	465.0	780.0	6.79%	5.56%
Per annum change from prior period (%)				12.1%		
OH (and all prior to 1975) prod'n	0.0	0.0	0.0	0.0		
Per annum change from prior period (%)				NA		
EAF steel production	44.0	48.5	60.0	67.5	3.97%	23.71%
Per annum change from prior period (%)				7%		
Foundry production (F)	18.6	19.3	20.0	28.0	3.81%	3.80%
Per annum change from prior period (%)				3.8%		
Total Metallics Requirement	526.0	607.3	675.2	1041.9	6.41%	11.18%
Ratio: Metallics/Crude+Foundry	1.192	1.195	1.206	1.190		
Sources of Metallics						
Pig iron production (P)	413.6	469.4	504.0	818.5	6.40%	7.37%
Ratio to BOF production	1.092	1.066	1.084	1.049		
HMS (hot metal substitute) production	0.0	0.0	0.6	6.7		
				15.5%		
SSS demand	0.6	0.7	0.7	1.9	10.12%	0.31%
Ratio to EAF output	0.01	0.01	0.01	0.03		
				8.6		
Steel scrap generated	128.1	147.6	170.0	229.1	5.43%	15.18%
Per annum change from prior period (%)				4.2%		
Of which: Home scrap generated	62.2	71.7	79.0	75.0	1.71%	10.18%
Ratio to Crude Steel + Foundry production	0.141	0.141	0.141	0.086		
Of which: New scrap generated	46.3	52.2	61.0	95.6	6.82%	17.01%
Ratio to ASC	0.130	0.130	0.130			
Obsolete scrap needed (derived)	31.8	41.2	58.8	58.5	5.70%	42.71%
Ratio to 10-40 yrs avg reservoir	0.881	1.069	1.429	0.593		
10-40 yrs avg obsolete scrap reservoir	36.1	38.6	41.2	98.7	9.56%	
Recovery Ratio	88.1%	106.9%	142.9%	11.7%		

WORLDSTEELDYNAMICS

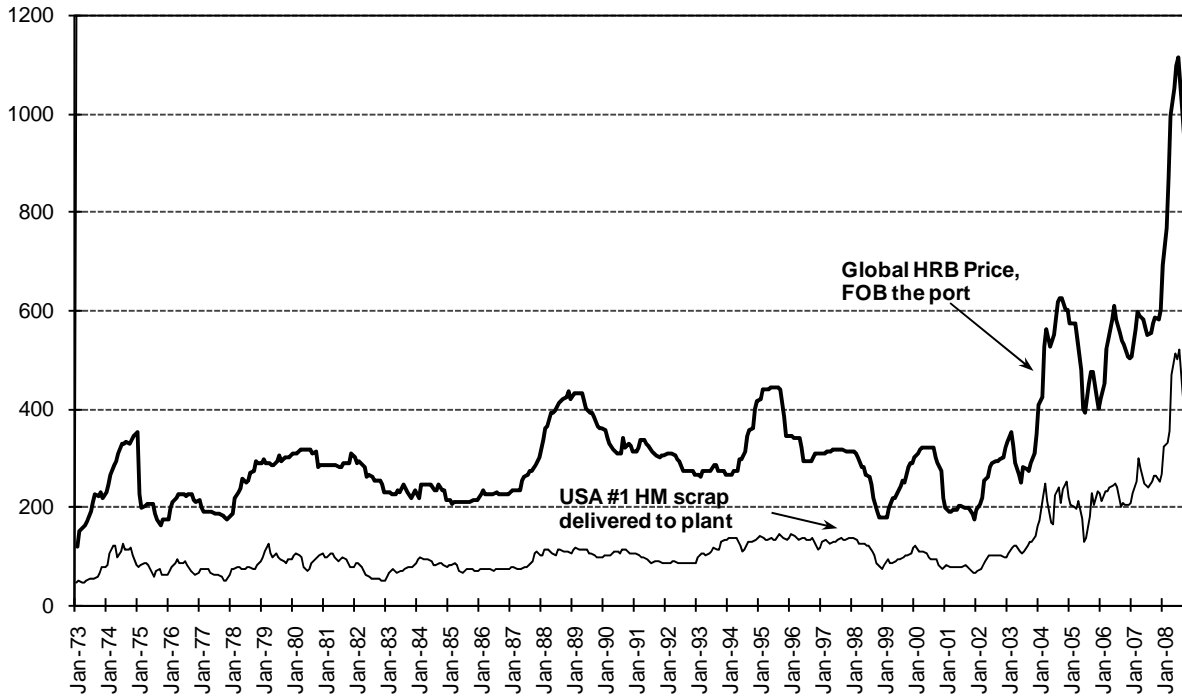
ROW Steelmakers' Metallics Relationships

million tonnes, unless otherwise specified

	2006	2007	2008	2017	CAGR 2006-2017	% '08 v '07
Crude x 0.927 = Finished Product EQ	318.5	335.3	380.5			
Less: Net Import of Semis	-5	-6	-14			
Less: Net Import of Finished Product	20	39	23			
Apparent steel consumption (EQ)	333.5	368.3	389.5	510.9	3.95%	5.78%
Crude steel production	343.6	361.7	410.5	485.3	3.19%	13.50%
Ratio to ASC (EQ)	1.030	0.982	1.054	0.950		
BOF Steel Production	165.6	171.5	200.0	300.5	5.57%	16.62%
Per annum change from prior period (%)				11.9%		
OH (and all prior to 1975) prod'n	32.1	28.6	25.5	0.0	-100.00%	-10.84%
Per annum change from prior period (%)						
EAF steel production	147.1	158.4	200.0	266.0	5.53%	26.30%
Per annum change from prior period (%)				11%		
Foundry production (F)	21.5	22.4	24.0	27.1	2.13%	7.22%
Per annum change from prior period (%)				3.1%		
Total Metallics Requirement	447.0	474.6	534.8	609.3	2.86%	12.68%
Ratio: Metallics/Crude+Foundry	1.225	1.236	1.231	1.189		
Sources of Metallics						
Pig iron production (P)	199.0	203.9	209.9	286.9	3.38%	2.95%
Ratio to BOF production	1.202	1.189	1.050	-15.2%		
HMS (hot metal substitute) production	1.3	1.3	2.1	17.5	26.74%	57.97%
				39.8%		
SSS demand	54.7	56.0	68.7	103.9	6.00%	22.63%
Ratio to EAF output	0.372	0.354	0.343	0.39		
				121.4		
Steel scrap generated	180.0	205.3	263.4	222.9	1.97%	28.30%
Per annum change from prior period (%)				3.7%		
Of which: Home scrap generated	48.9	51.5	58.2	59.7	1.83%	13.14%
Ratio to Crude Steel + Foundry production	0.134	0.134	0.134			
Of which: New scrap generated	20.2	21.7	27.4	64.5	11.16%	26.30%
Ratio to ASC	0.137	0.137	0.137			
Obsolete scrap needed (derived)	98.7	114.7	124.4	98.7	0.00%	8.39%
Ratio to 10-40 yrs avg reservoir	0.981	1.104	1.168	0.722		
10-40 yrs avg obsolete scrap reservoir	100.6	103.9	106.5	136.7	2.82%	
Recovery Ratio	98.1%	110.4%	116.8%	19.2%		

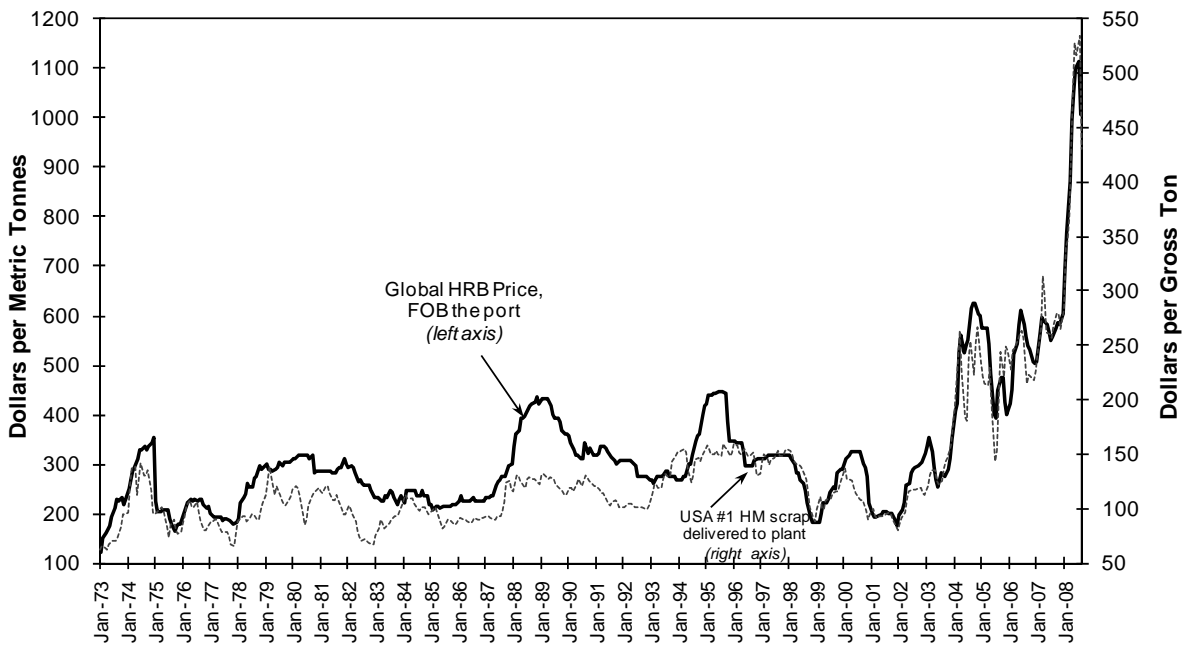
WORLDSTEELDYNAMICS

World HRB Price vs. USA #1HM Price



Source: WSD PriceTracker and SteelBenchmarker™

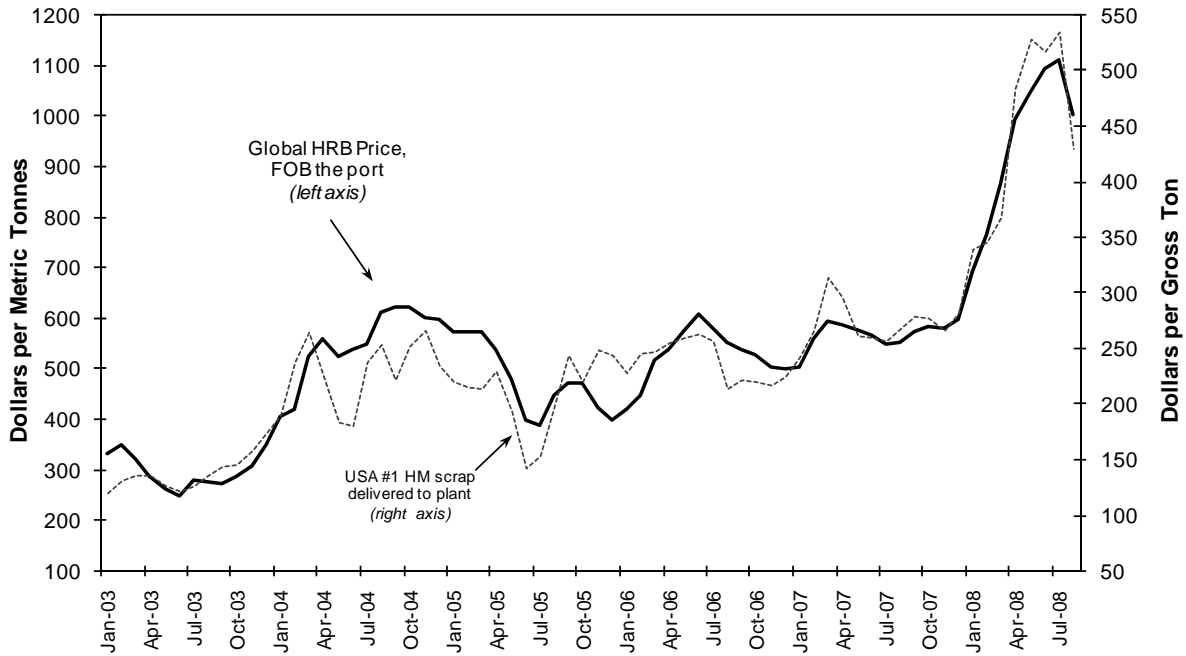
World HRB Price vs. USA #1HM Price



Source: WSD PriceTracker and SteelBenchmarker™

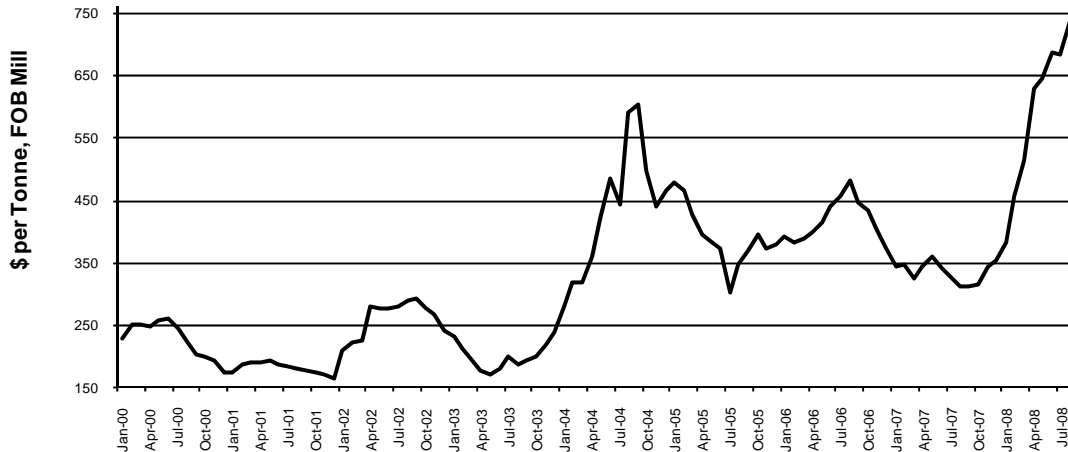
WORLDSTEELDYNAMICS

World HRB Price vs. USA #1HM Price



Source: WSD PriceTracker and SteelBenchmarker™

Spread USA HRB Spot Price less #1 Heavy Melt Cost



Source: WSD

WORLDSTEELDYNAMICS

Global Steel Demand Trends Since 1900

	Million Tonnes Produced	Per annum Compounded	# of Years
1900-1929	28 to 119	+5.1%	29
1929-1946	119 to 108	-0.6%	17
1946-1974	108 to 707	+6.9%	28
1974-1999	707 to 789	+0.4%	25
1999-2007	789 to 1,334	+6.9%	8
1999-2020e	789 to 2,221	+5.1%	26
2007-2020	1,344 to 2,221	+4.0%	13

Periods with HIGH Global Real GDP and Steel Demand Growth

ITEM	1900-1929	1946-1974	1999-2020E
GDP real growth rate <ul style="list-style-type: none"> <input type="checkbox"/> For USA <input type="checkbox"/> For other Advanced Countries <input type="checkbox"/> For Developing World 	<ul style="list-style-type: none"> <input type="checkbox"/> High <input type="checkbox"/> High <input type="checkbox"/> High 	<ul style="list-style-type: none"> <input type="checkbox"/> High <input type="checkbox"/> Very high <input type="checkbox"/> High 	<ul style="list-style-type: none"> <input type="checkbox"/> Moderate <input type="checkbox"/> Moderate <input type="checkbox"/> High
Value of U.S. dollar	Stable versus British pound.	Strong	Probably strong after 2008. Forecast to be only weak versus Chinese RMB.
Ratio of investment to GDP	Presumed to be rising.	Presumed to be rising.	Rising
Stock market performance (Dow Jones Industrial Average)	Up sharply.	Up sharply.	Presumed to be good.
Major growth regions	USA	Europe, Japan, USA	China, Rest of Developing World
Inflation rate	Low	Low	Moderate
Interest rates	Low	Low	Moderate
World Wars?	Yes – WW II	Yes – Cold War	No
Growing world trade?	Yes	Yes	Yes
Intertwined global financial system?	No	Minor	Very highly
Impact of Industrial Revolution?	Very substantial.	Substantial.	Lessened
Impact of Information Revolution?	Not meaningful.	Not meaningful.	Huge