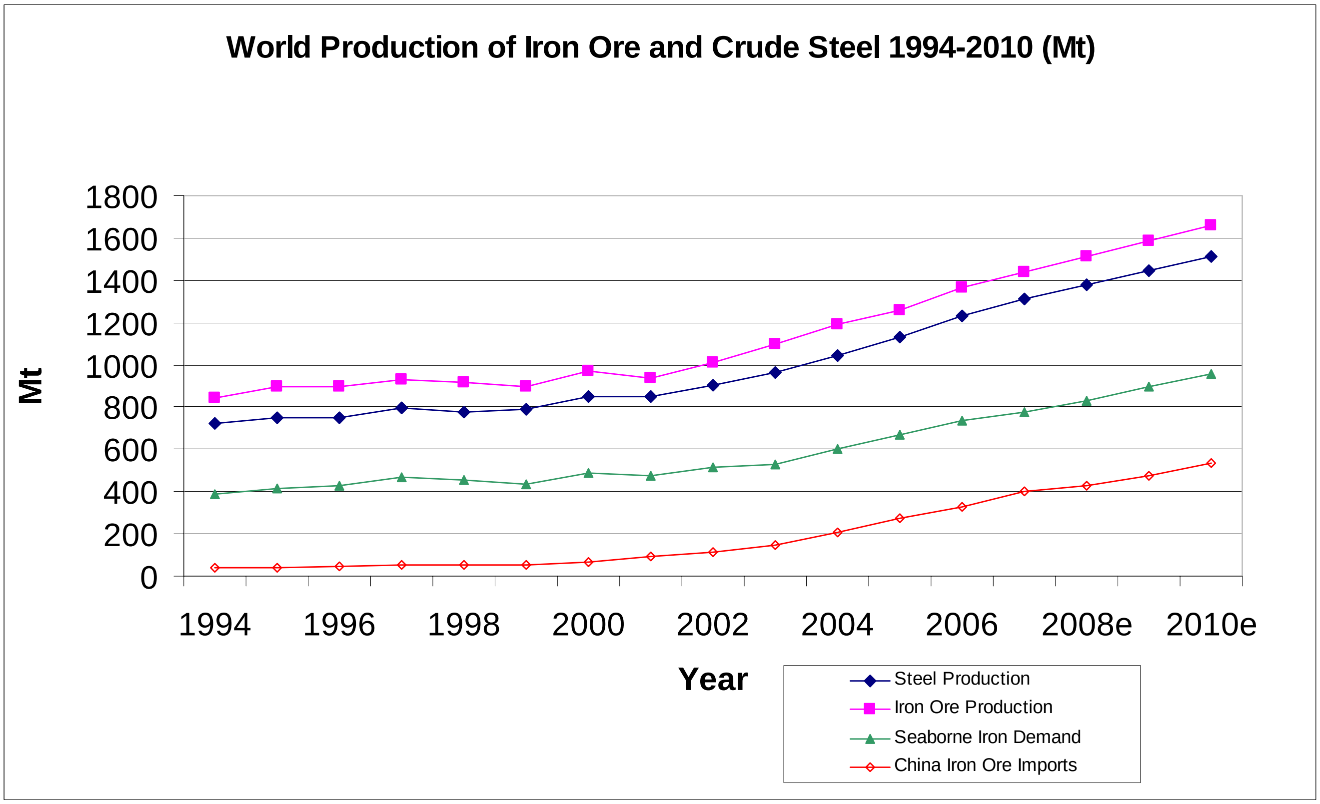
Update: 2007 April 30

## IRON ORE INDUSTRY TRENDS AND ANALYSIS

World production of iron ore increased again to another all time high in 2006 at 1,363 million tonnes and crude steel production increased to 1,234 million tonnes, 9% higher from a year earlier. Growth remains strong and the market consensus is that it will remain strong over the next three to five years. The current mantra for the industry is “stronger for longer”. Some market analysts believe that this current cycle will duplicate the growth seen after the Second World War that continued until the 1973 oil crisis. China remains as the major driver of the commodities market with spectacular annual growth in imported iron ore from 14 million tonnes in 1991 to more than 326 million tonnes imported in 2006. Forecasts have this growth rate slowing, however exactly when and at what level China’s demand will plateau is subject to much speculation.




Source: UNCTAD, IISI, Macquarie, Credit Suisse

## STEEL

Any analysis of the iron ore industry must include virtually the industry’s only customer - the world crude steel industry. Although iron ore is used in pigment production, pipe coating, heavy aggregates, magnets and even as an additive to animal feed, almost 99% of iron ore production is consumed by the steel industry. The steel industry has undergone rather dramatic changes in the 1990’s that continues. Producers have had to make decisions with increasing globalisation, falling prices, market distortions, reduction of trade barriers and opening markets, rising protectionism, development of new technologies, changes in customers structures and the continued problem of over-capacity.

World growth of iron ore and steel generally expands and contracts inline with world economic growth. However, although annual growth in world iron ore production has averaged 1.7%, over the past twenty years; during the same period western world exports of iron ore have increased 3.3% per year. This indicates a strong move towards quality as poor quality production has shutdown due to poor economics. Steel producers demand high quality iron ore products and rely on an increasing export market to meet this demand. Exports are dominated by two countries; Brazil and Australia. However, India has increased its exports dramatically over the past few years to almost 90 million tonnes. As much of this output is reportedly marginal and high cost, the debate is whether or not the level of export output can be sustained.

Globalisation is the most significant issue affecting the iron and steel industries and it has forced significant changes in attitude. In the past, steel and iron ore were considered strategic industries. All countries had to have a steel mill and iron ore deposit, which were considered essential to industrial growth and the wealth of a country. Most producers have had to jettison the emotional baggage that comes with the attitude that steel is a core industry basic to the growth development of a country's wealth and power. The growing international trade and extensive merger and acquisition activity has seen takeovers and alliances that would have been unheard of just ten years ago. Production of steel will generally follow the year to year change in world industrial production and demand, and expected economic growth rates.

The world steel production increase to 1,234 million tonnes in 2006 represents very strong demand in Asia as well as moderate to strong demand elsewhere in the world. Although steel is produced in virtually every country, six countries or regions dominate and account for almost 80% of world crude steel production and their imports of iron ore dominate the seaborne trade.

**World Steel Production**

| Country/Region | 2006 Crude Steel Production (Mt) | % of World Total | 2006 Imports of Iron Ore (Mt) | % of World Total |
|---|---|---|---|---|
| European Union – 15 | 173 | 14.0 | 147 | 20.2 |
| USA | 99 | 8.0 | 13 | 1.8 |
| Japan | 116 | 9.4 | 136 | 18.7 |
| PR of China | 419 | 34.0 | 326 | 44.7 |
| S Korea | 48 | 3.9 | 45 | 6.2 |
| FSU (Russia et al) | 119 | 9.6 | 12 | 1.6 |
| **Sub-total** | **974** | **78.9** | **679** | **93.3** |
| ***World Total*** | **1,234** | **100.0** | **728** | **100.0** |

Preliminary Estimates

Source: IISI, Skillings, Roskill, Merrill Lynch, Canaccord

The top six form the primary and most important customers for the iron ore exporting nations and account for almost 87% of iron ore imports. Consolidation in the Iron Ore Industry has become even more focussed as three companies, Companhia Vale do Rio Doce SA (CVRD), BHP Billiton Iron Ore (BHPBIO) and the Rio Tinto Iron Ore unit (RTIO) control directly seventy-five percent (~75%) of the seaborne trade. Nearly all iron ore is used to make steel, but not all steel is made from iron ore. Steel is produced via three processes.

The blast furnace remains the principal iron-making route while the basic oxygen furnace (BOF) remains the principal steel-making method accounting for 60% of production. Open hearth furnaces, once the only method of steel making, have been made virtually obsolete, driven out by environmental, operational and cost factors. It still accounts for 5% of steel production, but is expected to disappear as a method of steel-making in the near future. The electric arc furnace (EAF) steel making process accounts for 35% of world steel production. It uses mostly scrap steel (90+ %) as feedstock. Increasingly, directly reduced iron (DRI) or hot briquetted iron (HBI) have become an important feedstocks for the EAF process. However, both of these processes use iron ore.

The steel market has developed some unusual aspects over the past few years. Initially the Former Soviet Union was a major supplier of quality scrap steel, depressing prices throughout the 1990's and into early 2003. However, its supplies of quality scrap have been greatly reduced. It is important to realise that the EAF process does not improve the quality of steel produced. The quality of the input steel is the same as quality of the output of the steel produced by the EAF method. USA exports of scrap to China over the past two years, due to premium prices paid by Chinese steel mills, caused regional shortages of scrap.

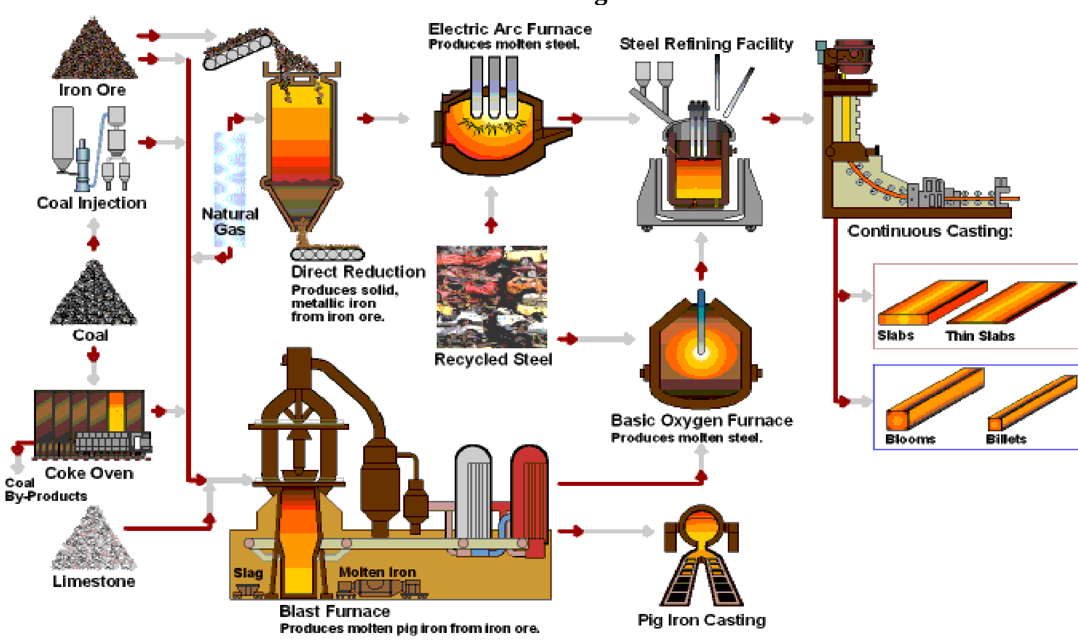
Asia now produces 666 million tonnes or almost 54% of the world's steel production compared to 35% of world output in 1993. China leads this growth and is the world's largest steel producer at 419 million tonnes of annual production, more than three times that of 2002 production levels. Analyst forecasts have China's steel production increasing to more than 500 million tonnes by 2010 with world output increasing to 1,500 million tonnes over the same period. Despite large planned increases in iron ore production by the CVRD, RTIO and BHPBIO, infrastructure capacity issues and the availability of heavy equipment may delay or impede realisation of these plans.

Mergers and takeovers in the steel industry have seen considerable consolidation over the past ten years. Over-capacity and, in the case of state-owned companies, heavy government subsidies slowed the much needed rationalisation of the industry. Consolidation started creating dominant groups within one country; such as ThyssenKrupp Stahl, which resulted from the merger of four large steel companies within Germany. Consolidation continued with British and Dutch steel interests forming Corus and the creation of Arcelor from Luxemburg, Spanish and French groups. In Japan, Kawasaki and NKK merged to form JFE and in Slovakia, US Steel bought Kosice.

This relatively small purchase of a Slovakian steel producer by an American country perhaps highlighted the end of protectionist aura that had previously surrounded the industry. In addition, strategic alliances have been created between partners that a few years earlier would not have been thought possible. More recently Mittal and Arcelor, the two largest steel companies merged after a lengthy takeover battle. Despite the consolidation, the top five steel producers control less than 20% of world output.

Rumours and speculation dominate news stories. Tata, the Indian conglomerate, won the takeover battle for Corus the Anglo-Dutch Group and the German steel producer Salzgitter sought to buy the Canadian Algoma Steel. It was reported that Salzgitter decided not to pursue the Canadian company after speculation increased its share price to such a premium that the purchase no longer made economic sense. The Essar Group from India has made an offer for Algoma and it appears that it will succeed. It is expected that mergers, takeovers and general consolidation of steel-makers will continue.

**The Steel Making Process**




Source: IISI, Steel.org

## IRON ORE

World iron ore production totalled 1,363 million tonnes in 2006, as iron ore companies stretch production to meet demand. Although iron ore production is widely spread occurring in almost fifty countries, the bulk of world production came from just five countries. The five largest producers Brazil, Australia, China, the former Soviet Union and India account for almost 80% of the world total.

**Production and Exports of Iron Ore by Principal Countries, 2006**

| | **Production (Mt)** | **% of total** | **Exports (Mt)** | **% exported** |
|---|---|---|---|---|
| **Country** | | | | |
| Brazil | 300 | 22.0 | 242 | 80.7 |
| Australia | 270 | 19.8 | 248 | 91.8 |
| China | 244 [Note 1] | 15.8 | 0 | 0 |
| Russia | 105 | 7.7 | 22 | 21.0 |
| India | 150 | 11.0 | 90 | 60.0 |
| Ukraine | 73 | 5.4 | 20 | 27.4 |
| USA | 54 | 4.0 | 14 | 25.9 |
| South Africa | 40 | 2.9 | 26 | 65.0 |
| Canada | 33 | 2.4 | 28 | 84.8 |
| Sweden | 24 | 1.8 | 19 | 79.2 |
| *Sub-total* | 1293 | 94.8 | 709 | 54.8 |
| **World total** | **1363** | **100.0** | **739** [note 3] | 100.0 |

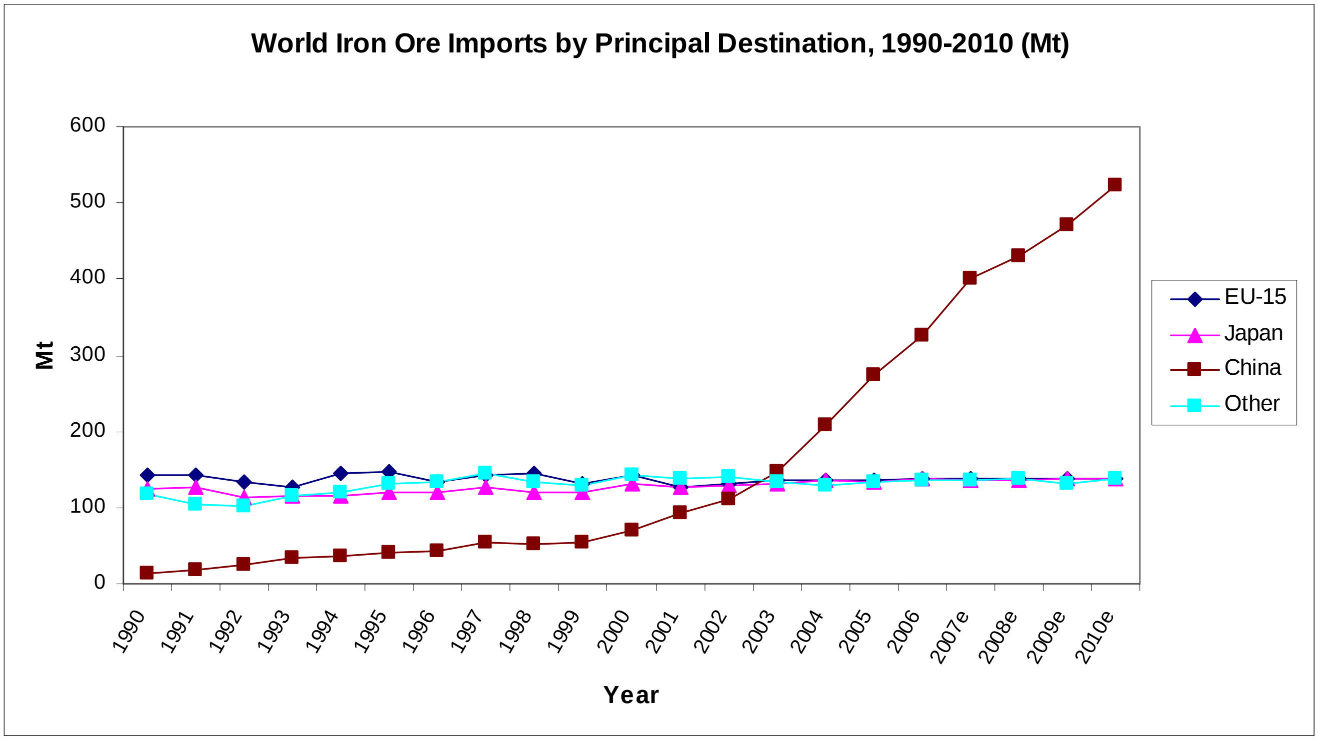
Note 1: Normalised to 65% Fe equivalent, official output 588 Mt production; FSU exports are dominantly internal to CIS countries and former Eastern block countries; India sold ~78 Mt to China on a spot market basis in 2005; spot prices have been extremely variable throughout the year.
Note 2: Shipments not production, some 6-7 Mt are traded on Great Lakes between steel consumers
Note 3 Total exports including seaborne and non-seaborne trade
Preliminary Estimates

Source: UNCTAD, Roskill, Skillings

Iron ore producers historically fell into two basic categories, captive producers and exporters. Captive producers were those owned by steel companies and generally sold its production exclusively to their owner(s)-customer. Exporters sold to a number of customers and were subject to external market demand, improving sale product quality and in some cases developing new deposits to meet changing demand despite reserves in existing operations. Producers were dominantly captive in the past, but this has and will continue to change. Steel producers may maintain a minority or strategic interest in iron ore companies, but want flexibility of supply. Iron ore is predominantly sold via long-term contracts that specify certain volumes that the steel producer must take.

In both Asia and Europe, steel producers formed buying groups and prices are negotiated annually in so-called mating seasons. The initial price settlement in the mating season is very important as it traditionally sets the basis or benchmark for other company's negotiations. In Asia, BHPBIO and RTIO had been the traditional price setters, while CVRD generally set the benchmark for European sales. In the past, the first company to settle on price will gain volume at the expense of other producers. More recently, CVRD has been the company setting benchmark prices in both hemispheres. China has stated that, as the largest importer of iron ore, it should be the trendsetter and establish the benchmark price.

China has been the primary driver behind demand growth and the recent impressive increase in iron ore prices. Its imports in 1990 totalled just 14 million tonnes. This increased to a staggering 326 million tonnes in 2006 and imports are forecast to increase to more than 500 million tonnes by 2010. China imported more than 100 million tonnes in the first quarter of 2007. This represented a 24% increase over the same period in the previous year. China's demand has obscured consistent moderate increases in demand within other market and growth economies. Importantly the focus on China's growth has perhaps underestimates world iron ore import demand outside of China, Japan and the European Union (EU-15). While the EU and Japan's growth remains flat, indicative of their mature economies, most forecasts have the rest of the world's steel output and iron ore consumption (outside of China) contracting slightly over the next five years.




Source: UNCTAD, Roskill, Skillings

The relationship between steel mills and iron ore producers has historically been adversarial. In early 1999, BHPBIO and RTIO announced that they would jointly market their iron ore production. Although the attempt failed, the effort did shock the Japanese Steel Mills (JSM) buying group.

More recently, China as the world's largest iron ore importer has attempted to take over the role of the market leader. This has met with mixed success as the Chinese government attempts to mitigate the price increases and maintain quality control on imported iron ore. China had demanded that the price of iron ore fall by approximately 10% in 2006, then argued for no price increase before finally accepting the settled benchmark of a 19% increase in price for fines (sinter feed) and lump. Pellet prices declined by 3% indicating a possible oversupply of pellets in the market. Quality issues in some pellet production are also rumoured. In December 2006, Baosteel agreed to a 9.5% price increase with CVRD. This surprised many in the industry who believed that the Chinese were too inexperienced to takes the role as the market leader and setter of the benchmark.

**Iron Ore Price Benchmark Comparison**

| **Prices – European Benchmark** | **1999** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** |
|---|---|---|---|---|---|---|---|---|---|
| CVRD Itabira Fines (US¢/dmtu – FOB) | 27.0 | 27.7 | 28.9 | 29.1 | 31.04 | 36.45 | 62.51 | 74.39 | 81.46 |
| CVRD Carajas Fines (US¢/dmtu – FOB) | 27.6 | 28.8 | 30.1 | 29.3 | 31.95 | 37.90 | 65.00 | 77.35 | 84.70 |
| CVRD Carajas Lump (US¢/dmtu – FOB) | 32.28 | 33.94 | 35.18 | 34.31 | 37.36 | 44.46 | 79.58 | 94.70 | 103.70 |
| CVRD Itabira/Carajas Pellets (US¢/dmtu – FOB) | 46.5 | 49.9 | 52.4 | 50.4 | 54.93 | 63.60 | 118.57 | 115.01 | 121.08 |
| **Prices – Japanese Benchmark** | | | | | | | | | |
| Mt Newman/Hamersley Lump US¢/dltu – FOB) | 34.83 | 36.84 | 38.03 | 36.13 | 39.35 | 46.67 | 80.04 | 95.25 | 104.30 |
| Mt Newman/Hamersley Fines US¢/dltu – FOB) | 26.63 | 27.79 | 28.98 | 28.28 | 30.83 | 36.67 | 62.89 | 74.84 | 81.95 |

Source: IISI, Skillings, Roskill

The surprise of Baosteel appears to indicate a significant change in China's attitude towards the iron ore market. It allowed business to negotiate on the world market with little visible political influence.

## Pricing, Products and Markets

Year to year prices can be variable and comparing prices can be complex. Prices are quoted in dry iron ore units (% Fe), either dry long ton units (dltu) in Japan and dry metric tonne units (dmtu) in Europe. To add to the confusion, European prices are sometimes quoted CIF (cost/customs, insurance and freight) or DES (delivered ex-ship) to European ports, while Japan quotes prices are FOB (free on board) to the mine's terminal port. Steel mills will seek out specific characteristics of different iron ore products to maximise productivity in the blast furnace and also reduce costs.

Dependent upon the specific blast furnace, different characteristics will have different levels of importance. These characteristics can be physical, chemical and metallurgical. As most blast furnaces utilise various iron ore products from various different iron mines to complement and maximise productivity, steel mills place different importance on specific characteristics. These characteristics can be iron content, reducibility, grain size, moisture content and/or levels of deleterious elements. Penalties can be severe for high concentrations of deleterious elements such as phosphorus, base metals, sulphur, alkalis, silica, alumina and titania oxide. Although prices are calculated in dmtu, negotiations and contract settlements will be in natural metric tonne units (nmtu). In addition, shipping rates also play a significant part of the negotiation process.

In 2005, the announced price increase for iron ore sale products between CVRD and Nippon Steel was 71.5%. The increase was justified by a weakening US dollar, extremely strong steel demand and corresponding strong demand for iron ore. The 71.5% price jump was trumped by the 86.67% increase in Carajas pellets and Carajas lump into Europe rose 79%. This increase in the price of lump has allowed Carajas lump to pass the Brockman lump in price per Fe unit. Previously, Carajas was discounted to the Australian lump, primarily due to excessive fines (-6.3 mm) generation. Iron ore producers also noted strong steel prices over the past few years were justification for both the iron price increase and the 120% increase in coking coal. Despite price increases, the steel mills state that steel prices have only increased to 1980's price levels and also note that prices during the period 1990-2003 were artificially low.

In 2006, the announced price increase between CVRD and ThyssenKrupp was 19% for fines (sinter feed) and a 3% reduction in the price of pellets. Despite criticism in the press by China that this was not a benchmark, other companies quickly settled prices along the now established benchmark. The decrease in the price for pellets was explained by an oversupply and the disproportionate 2005 increase for pellets. The increase for the price of lump was settled by Pohang Iron and Steel (POSCO) and Rio Tinto also at 19%.

This has changed the historic ratio of prices between fines, lump and pellets. Historically, the premium in price of lump to fines was ~30%, while the pellet to lump premium was ~40%. In 2005 through 2007, the ratios in percentage terms changed dramatically, initially increasing and then dropping sharply. The ratios no longer follow the historic trend. Pellets are now ~ US¢19 per dmtu more expensive than lump, which is above the historic premium of ~US¢15 per dmtu but half of the premium seen in 2005 of ~ US¢40 per dmtu. Lump is now priced at a ~ US¢22 premium to the fines benchmark, which is also above the historic premium of ~ US¢9-10 per dmtu. This may have established a new trend with a ~US¢20 difference per dmtu between the benchmark prices.

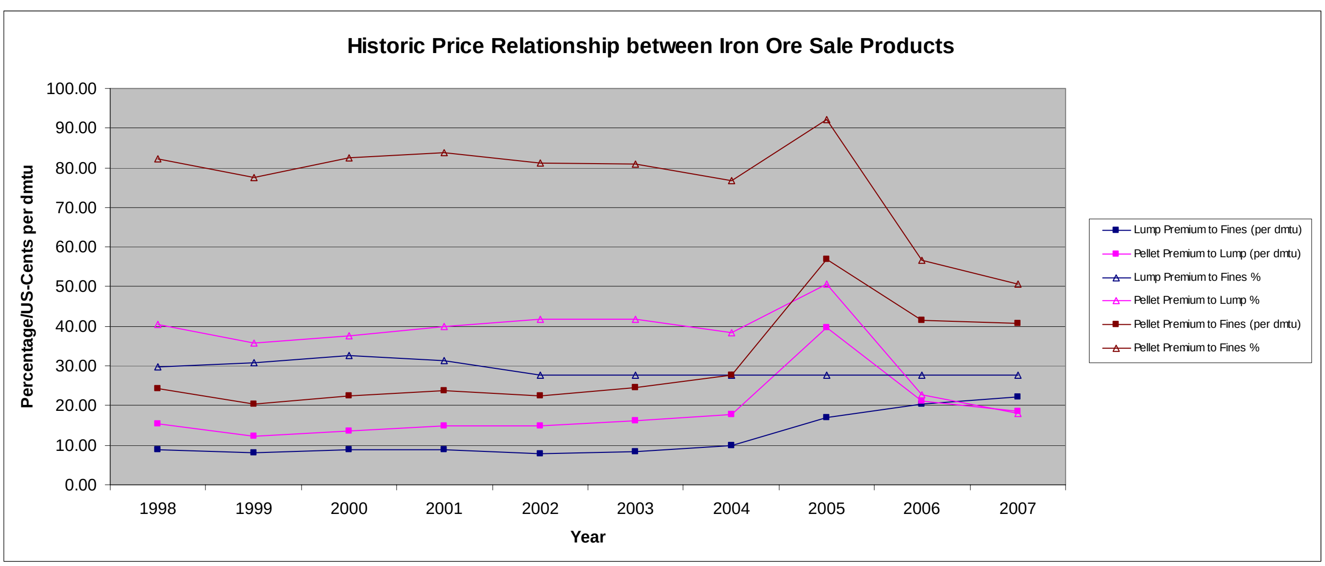
The price increase for 2007 was settled at 9.5% for lump and fines. As stated, the settlement was between the Chinese Baosteel and CVRD, which surprised many. Pellet prices were initially settled up 5.28% between ILVA, the Italian steel group and CVRD. There was some confusion here as ILVA is an investor in CVRD's pellet plant. In March 2007, Corus settled on a 7.2% increase with Sweden's LKAB pellets and 11.1% increase for Kiruna fines. These differences from the lower benchmark price represent a freight differential that although had long been part of the price negotiation process, is now becoming more transparent.

2007 Price Settlement Chronology

| Settlement Date | Supplier | Steel Mill | Ore Type | Brand | US¢/dmtu | % Change |
|---|---|---|---|---|---|---|
| 2006-Dec-21 | CVRD-Brazil | BaoSteel-China | Fines | SFCJ | 73.20 | 9.50 |
| | | | Fines | SSF | 72.11 | 9.50 |
| 2006-Dec-22 | RTIO-Aust | BaoSteel-China | Lump | Hamersley | 102.64 | 9.50 |
| | | | Fines | Hamersley | 80.42 | 9.50 |
| 2006-Dec-22 | BHPBIO-Aust. | BaoSteel-China | Lump | Mt Newman | 102.64 | 9.50 |
| | | | Fines | Mt Newman | 80.42 | 9.50 |
| 2006-Dec-26 | CVRD-Brazil | JSM-Japan | Fines | SFCJ | 73.20 | 9.50 |
| | | | | SSF | 72.11 | 9.50 |
| 2006-Dec-28 | CVRD-Brazil | ILVA-Italy | Fines | SFCJ | 84.70 | 9.50 |
| | | | Fines | SSF | 81.46 | 9.50 |
| | | | Pellets | Ponta Da Madeira | 121.08 | 5.28 |
| | | | Pellets | Tubarão | 117.96 | 5.28 |
| 2007-Jan-11 | RTIO/BHPBIO-Aust. | JSM-Japan | Lump | Hamersley etal | 102.64 | 9.50 |
| | | | Fines | Hamersley etal | 80.42 | 9.50 |
| 2007-Feb-06 | MMTC/NMDC-India | JSM-Japan | Lump | COH | 101.11 | 9.50 |
| | | | Fines | Basic Grade | 78.45 | 9.50 |
| 2007-Mar-22 | LKAB-Sweden | Corus-UK | Pellets | BF Pellets | 131.00 | 7.20 |
| | | | Fines | Kiruna B | 96.00 | 11.10 |
| | | | Fines | Malmberget A | 96.50 | 11.00 |
| 2007-Mar-26 | QCM-Canada | ThyssenKrupp-Germany | Pellets | Acid BF Pellets | 122.58 | 5.80 |
| | | | Concentrates | Regular Conc. | 86.40 | 10.42 |

Source: Tex Report

The 2007 price increases further changed the historic price relationship between fines, lump and pellets. It is expected that this relationship will move back to the historic norm in the near future. There are reported discussions between several steel companies and lump ore producers that will see a correction in the lump to fines ratio in the next few years. As lump competes with pellets, a manufactured product, primarily on price, this should bode well for the long-term lump market.

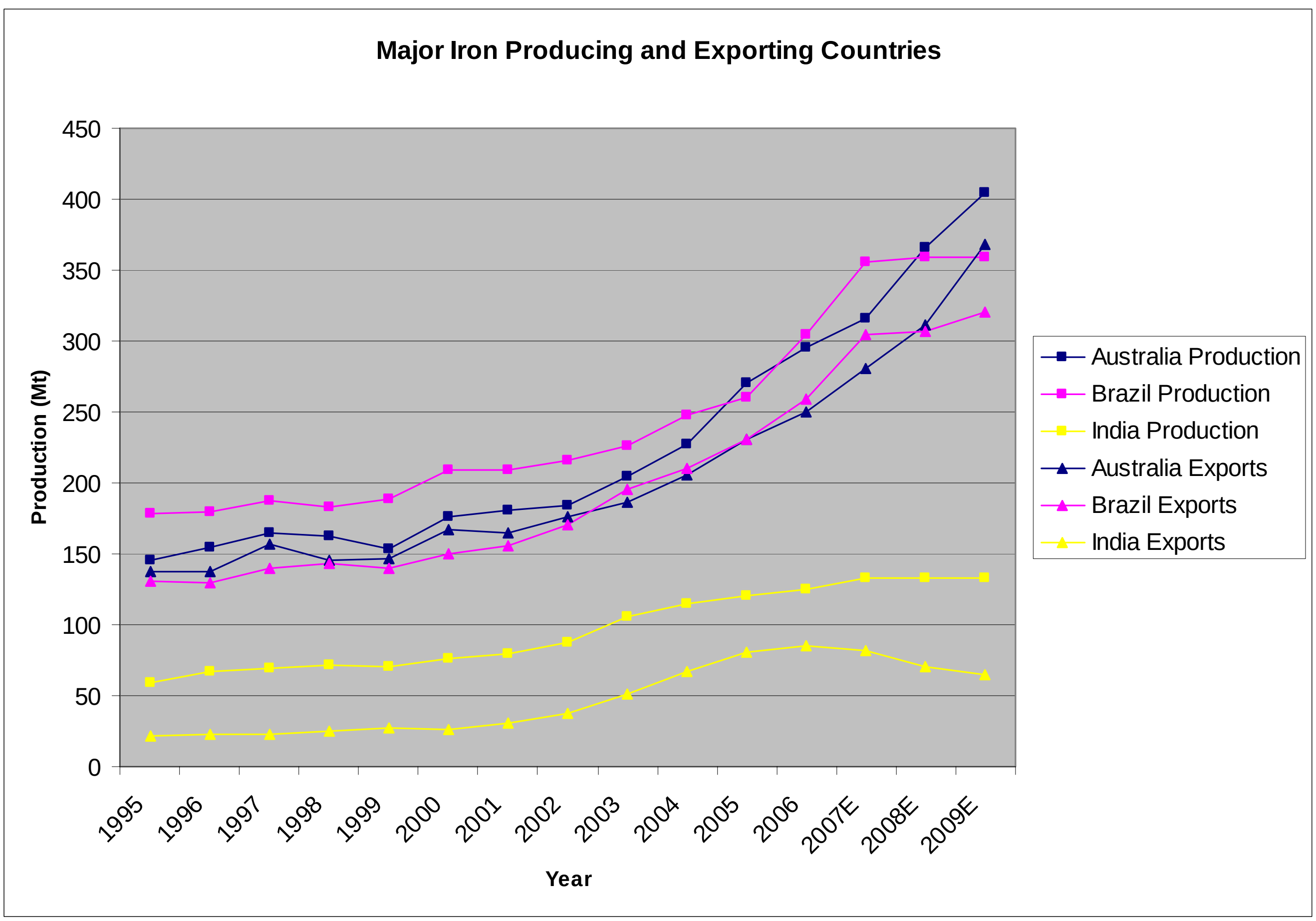



Source: Company Reports, Roskill

BHPBIO and RTIO have stated that the recent large price increases (2005=71.5%; 2006=19%; 2007=9.5%) will not attract significant new entrants to the iron ore industry. They argue that development of a quality iron ore deposit and entry into the market is a difficult task due to the inherent barriers associated with finding and developing a quality iron ore deposit. The comment makes clear that not all iron ore deposits are equal. The difficulty and importance of developing a quality sale product is not well understood by the mining industry. Given the lack of new iron ore developments over the past several decades, this is perhaps understandable. Comprehensive analytical, physical and metallurgical testing of potential sale products are key components of the potential exploitation of any iron ore deposit and establishing a long-term customer base in a demanding market.

However, the gauntlet thrown down to the exploration industry is a bit frightening given its historic ability to flood markets of other commodities with new discoveries and developments. New developments have been announced in Australia led by the Fortescue Metals Group Limited and its aggressive plans to produce 45 million tonnes of iron ore by 2008. In Brazil, the launch of a new iron ore company called MMX Mineração & Metálicos S.A. which plans to produce 37 million tonnes of iron ore in the near future. Unlike other iron ore producers, MMX also plans to produce pig iron. Other companies in Australia, Canada and other parts of the world have announced smaller but equally ambitious projects. Many of these projects have made considerable and possibly speculative assumptions regarding: ability to actually produce a quality and saleable product; use of third-party infrastructure; marketability and saleability of its sale product; the future price of its sale product; development timetable; expected capital and operating costs.

Three countries, Brazil, Australia and India dominate the seaborne trade of iron ore.




Source: Merrill Lynch, Macquarie, Roskill, UNCTAD

Most of the recent growth in India exports has been spot sales to China and much has been from production that is of reportedly questionable sustainability. Various press articles have reported commentary from several large Indian steel companies who lobby for a ban on spot sales and additionally want a ban on all iron ore exports. Their arguments focus on the growth rate of Indian steel production and the requirement of the iron ore for internal consumption. Forecasts have India producing an additional 150 million tonnes of steel annually by 2015. In March, the Indian government introduced a Rs 300 (US$ 6.78) per tonne export tax on iron ore that was understandably not well received by the Chinese importers. This tax was not well received by Chinese steel mills who believe that it was unfairly imposed on them and refused to pay it. The steel companies argued that prices should not change and that the iron ore companies should bear the cost. China received the great majority of India's iron ore exports primarily as the spot sales rather than under long term contracts. This tax was reduced to Rs 50 (US$ 1.20) for iron ore fines with iron content less than 62% Fe. The tax remains on other iron ore exported products.

India remains the wildcard in attempting to accurately forecast the iron market's future. It has been repeated several times over the past few years that its export growth cannot be sustained. Despite the statement that much of the new production is high cost and marginal and is only profitable due to the high premiums received in the spot market, exports continue to increase. Major Indian companies, Tata Iron and Steel and the Steel Authority of India Ltd. (SAIL), want to restrict iron ore exports saying that the iron ore is needed to meet local demand. This rapid expansion in production has seen casualties as Kudremukh Iron Ore Company Limited was ordered by the India Courts to cease iron ore production due to environmental violations. As stated forecasts have India expected to increase steel output by some 150 million tonnes sometime in the next decade. If accurate, India would either have to reduce exports of iron ore dramatically or increase internal production.

MiningNews.net reports that analyst estimates over the past few years by market analysts for Chinese iron ore imports have changed dramatically and increased from an expected importation of 250 million tonnes of iron ore by 2015 to more than 500 million tonnes by just 2010. Past estimates of demand growth that were thought to be wildly optimistic have proven to vastly underestimate market demand. China imported 326 million tonnes in 2006 and throughout the year there has been some discussion that China's has slowed considerable and perhaps peaked. Much of this discussion was from both China and steel companies who believed that the market is coming into a supply-demand balance and want to see prices come down.

Competition amongst iron ore producers is fierce. In the past, steel mill buying groups have kept prices low by playing on the competitive and antagonistic behaviour of producers. Until very recently, prices dropped constantly in real terms while iron ore products were expected to meet tighter and more consistent quality specifications. Many captive iron ore producers were jettisoned as steel producers focused on higher quality iron ores that were expected to become more efficient producers with a better quality iron ore, while receiving a lower return for their sale product.

Evaluation of supply-demand statistics and inventory levels in the steel and iron ore markets has taken on new levels of conjecture and predictive capabilities. More recently, China took steps to improve its statistical data and is attempting to eliminate under-reporting of iron ore and steel production. Year to Date data reports a major increase in Chinese iron ore production. In 2006, China's iron ore production increased more than 30% to 588 million tonnes, but this is a global tonnage of generally very low iron content. Previously it was assumed that the average iron grade was 30-35% iron (Fe), but balancing pig iron production indicates that the actual average grade has slipped to ~25-27% Fe or perhaps lower. It has been reported that there are numerous underground operations that are mining less than 15% Fe. The concern remains a collapse of this production due to environmental and safety concerns and the resultant loss of iron credits would put extraordinary pressure on the seaborne iron ore trade, perhaps exceeding the record price increase seen in 2005.

Despite China's apparent record iron production, import demand increased 24% to more than 100 million tonnes in the first quarter of 2007. This appears to have staggered analysts and forecasts. Many analysts had projected a 15 to 25% price decrease for 2008 as new capacity expectedly came on stream and Chinese demand slowed. Macquarie revised their price forecast from a 15% decrease to 10% increase in 2008. Credit Suisse has come forward stating that it does not expect to see any weakness in the iron ore price until 2013 at the earliest.

The move to importing quality ores was made more efficient due to more open and efficient shipping markets. Shipping rates in the fifteen year period from 1983-1998 steadily decreased. In 1998, ocean freight rates fell quite dramatically, which reduced the cost advantage that the Australian producers held in the Asian markets. This allowed Brazil's CVRD to make significant market penetration into the Asian markets. Shipping rates have increased due to the increase in oil prices and tight capacity for bulk carriers.

**Representative Spot Iron Ore Freight Rates, 1993 to 2007**
**(Capesize vessels 130,000-170,000 dwt; $/t)**

| Year | W.Africa[2]-Continent | Brazil-Continent | Canada-Continent | Australia-Continent | Norway-Continent | Brazil-China/Japan | Australia-Japan |
|---|---|---|---|---|---|---|---|
| 1993 | 3.6 | 5.6 | 5.2 | 7.4 | 2.9 | 9.2 | … |
| 1994 | 4.1 | 6.4 | 6.3 | 9.0 | 3.2 | 10.3 | … |
| 1995 | 5.4 | 7.6 | 7.2 | 9.9 | 3.9 | 13.5 | … |
| 1996 | 4.2 | 5.6 | 5.3 | 7.0 | 3.0 | 9.1 | 4.4 |
| 1997 | 4.2 | 6.2 | 5.5 | 7.5 | 3.2 | 10.7 | 5.0 |
| 1998 | 2.8 | 4.5 | 4.0 | 6.0 | 2.4 | 6.5 | 3.7 |
| 1999 | … | 4.7 | 4.0 | 6.7 | 2.5 | 6.9 | 3.7 |
| 2000 | … | 7.5 | 6.2 | 10.9 | 3.5 | 11.7 | 6.3 |
| 2001 | … | 5.4 | 4.6 | 7.8 | 2.5 | 8.4 | 4.3 |
| 2002 | … | 5.4 | 4.4 | 7.0 | 2.5 | 8.7 | 4.1 |
| 2003 | … | 8.3 | 6.6 | 10.7 | 3.5 | 14.1 | 6.8 |
| 2004 | … | 19.7 | 16.0 | 21.1 | 7.7 | 33.1 | 15.6 |
| **2005** | … | **17.5** note 1<br>**15.9** | **12.1** note 1<br>**11.9** | **16.3** | **6.9** note 1<br>**6.7** | 30.1 | 12.6 |
| **2006** | | **17.4** | | **14.8** | **5.8** | **25.6** | **10.3** |
| **2007** | | **26.4** note 2 | | **24.4** note 2 | **10.0** note 2 | **45.0** note 2 | **17.3** note 2 |

**Note 2: proposed long-term contract rate includes unloading at terminal port (~$1.75/t)** Source: Drewry Shipping Consultants, SSY, Clarksons, Macquarie
**Note 3: spot rate at end of first quarter**

However, over the past few years, short-term/spot freight rates increased two and three-fold due to the attempt to meet China's demand, before sharply decreasing at the end of 2005. It is important to realise that the great majority of shipping rates for all bulk commodities are negotiated through long-term contracts. These rates fix an exporters and importers cost over a period of time, on average ten years. The prices have an inflator for fuel increases and other third party costs such as port fees based upon an agreed formula. Dependent upon market conditions, spot rates can also be significantly lower than long-term rates

In 2005, BHPB did not settle sales agreements in line with the benchmark iron ore price. It argued that Australian iron ores shipped into Asian markets should receive a premium price due to the additional cost of shipping from India or Brazil. This premium has existed in the market historically as pellet prices had a shipping equalisation component in the negotiated price.

**Pellet Price Comparison**

| **Pellets Prices – European Market** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** |
|---|---|---|---|---|---|---|---|---|
| IOC Pellets (US¢/dmtu – FOB) | 50.60 | 51.53 | 48.30 | 53.22 | 64.50 | 120.06 | 115.86 | *122.58* |
| CVRD Tubarao Pellets (US¢/dmtu – FOB) | 49.24 | 50.10 | 47.36 | 52.00 | 61.88 | 115.51 | 112.04 | 117.96 |
| LKAB Pellets (US¢/dmtu – FOB) | 53.00 | 54.08 | 49.95 | 55.62 | 69.25 | 128.00 | 122.20 | 131.00 |
| CVRD Carajas Pellets (US¢/dmtu – FOB) | 49.90 | 52.40 | 50.40 | 54.93 | 63.60 | 118.57 | 115.01 | 121.08 |
| Samarco Pellets (US¢/dmtu – FOB) | 48.43 | 49.25 | 46.68 | 51.36 | 60.86 | 113.62 | 111.40 | *117.29* |

Italics: estimates, actual figures not yet released Source: Tex Report

BHPB has backed down from this demand; however China has now reversed the argument stating Brazilian ores must be discounted further due to the higher shipping costs from Brazil versus ores imported from Australia. CVRD already has different benchmark prices into the European or Asian market that are tabulated below. This price structure is not without critics as customers in the Middle-East complain that they are expected to pay European benchmark prices while paying close to Asian freight rates.

Baffinland Iron Mines Corporation

**CVRD Iron Ore and Pellet Price Reference**

| | EUROPE (DMTU) | | | | | | | ASIA* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | Standard Sinter Feed (SSF) | Carajás Sinter Feed (SFCJ) | Carajás Lump (CJL) | Tubarão Blast Furnace Pellets (BFP) | Tubarão Direct Reduction Pellets (DRP) | São Luís Blast Furnace Pellets (BFP) | São Luís Direct Reduction Pellets (DRP) | Standard Sinter Feed (SSF) | Carajás Sinter Feed (SFCJ) | New Tubarão A Lump Ore (NTA) | Blast Furnace Pellets (BFP) |
| 1993 | 28.14 | 29.09 | 33.09 | 43.64 | 46.91 | | | 25.42 | 25.92 | 26.32 | 41.69 |
| 1994 | 25.47 | 26.47 | 30.47 | 43.64 | 46.91 | | | 23.01 | 23.51 | 24.77 | 41.68 |
| 1995 | 26.95 | 28.38 | 33.38 | 49.14 | 52.82 | | | 24.34 | 24.84 | 26.73 | 46.93 |
| 1996 | 28.57 | 30.00 | 35.25 | 52.40 | 56.33 | | | 25.80 | 26.30 | 28.07 | 50.05 |
| 1997 | 28.88 | 30.15 | 35.25 | 52.10 | 56.01 | | | 26.08 | 26.58 | 28.07 | 49.76 |
| 1998 | 29.69 | 31.00 | 36.29 | 53.56 | 57.58 | | | 26.82 | 27.32 | 28.90 | 51.15 |
| 1999 | 26.96 | 27.59 | 32.28 | 46.46 | 49.94 | | | 23.87 | 24.37 | 25.95 | 44.38 |
| 2000 | 27.67 | 28.79 | 33.94 | 49.24 | 52.93 | | | 24.91 | 25.41 | 27.45 | 47.03 |
| 2001 | 28.92 | 30.03 | 35.18 | 50.10 | 53.86 | | | 25.98 | 26.48 | 28.34 | 47.85 |
| 2002 | 28.62 | 29.31 | 34.31 | 47.36 | 50.91 | | | 25.36 | 25.86 | 26.92 | 45.23 |
| 2003 | 31.04 | 31.95 | 37.36 | 52.00 | 55.90 | 52.96 | 56.93 | 27.64 | 28.14 | 29.32 | 49.66 |
| 2004 | 36.45 | 37.90 | 44.46 | 61.88 | 66.52 | 63.60 | 68.37 | 32.79 | 33.29 | 34.78 | 59.10 |
| 2005 | 62.51 | 65.00 | 79.58 | 115.51 | 126.06 | 118.57 | 130.43 | 55.34 | 56.18 | 61.28 | 112.04 |
| 2006 | 74.39 | 77.35 | 94.70 | 112.05 | 122.28 | 115.01 | 126.52 | 65.85 | 66.85 | 72.91 | 108.68 |
| 2007 | 81.46 | 84.70 | 103.70 | 117.96 | 128.74 | 121.08 | 133.20 | 72.11 | 73.20 | 79.84 | 114.42 |

Notes: US¢ / Fe Unit

*DLTU until 2004
*DMTU since 2005
Source: Company Website

In 2006, spot rates into China appear to have stabilised as Chinese ports become more efficient and there are shorter delays. In early 2007, shipping rates again increased with individual Brazil to China spot rates exceeding $50 per tonne and the Brazil to Europe spot rate exceeding $30 per tonne for the first time. A recent cape class bulk carrier per day charter rate exceeded $126,000.

Spot shipping rates worldwide are subject to considerable variability. Producers or consumers that underestimate or do not cover their contract positions have been forced to access the spot market, both iron ore and shipping, to meet obligations. In many instances, the freight rate and spot iron ore price can more than double the long-term contract value. Port and handling capacity at many of Asia's ports have been severely stretched and it is reported that ships have waited several weeks to unload their cargo. This bottleneck has been alleviated more recently, but shipbuilding is at and is expected to remain at capacity for the near future. However, it is important to realise that dependent upon market conditions, spot rates have been cheaper than long-term rates over significant periods of time. Effectively, iron prices are a two-part negotiation; one of iron ore price and one related to the freight rate.

Lower and possibly more stable shipping rates for iron products are expected in the near future. Long-term rates are estimated to be similar to the average of spot rates reported for 2005 and are not expected to see the historically low rates of the 1990s. New builds are primarily replacing old tonnage as safety and environmental legislation in Europe will force all shipping companies to use double-hulled or reinforced bulk carriers by 2012. Tankers must meet this requirement earlier. Similar legislation has been tabled in Japan and the USA, despite fierce lobbying by ship owners. Rates should rise to allow companies to repay significant capital outlays for new safer double-hulled and or reinforced fleets. This will be offset by cost savings on insurance premiums that have risen dramatically in the 1990's to accommodate past ship wrecks and oil spills. These 'preventable' accidents have lead to increased demand for safer and better quality ships. Additional cost savings will also be realised due to more efficient designs, cost effective propulsion systems and faster loading and unloading times.

Currently CVRD, BHPBIO and RTIO have expansion plans to increase iron ore output significantly. By the end of the decade, RTIO plans to increase output by 46 million tonnes and BHPBIO by 80 million tonnes. CVRD recently announced plans to increase output by a further 150 million tonnes to 450 million tonnes per year. In the cases of BHPBIO and RTIO, infrastructure appears to be at capacity and planned expansions will require new rail and port capacity. The increases would add to the big threes already dominate market position. Currently they control 75% of the seaborne trade in iron ore. Including all reported planned projects; iron ore output is expected to increase 508 million tonnes by the end of the decade.

**Corporate Control of Iron Ore Production and Exports, 2006 (% of world total)**

| | **Production** | **Seaborne Trade** |
|---|---|---|
| CVRD | 19.9 | 37.2 |
| Rio Tinto | 12.2 | 22.9 |
| BHP Billiton | 8.4 | 14.5 |
| **Total** | **40.5** | **74.7** |

Source: UNCTAD, Macquarie

Despite this increased output, demand and supply is expected to remain closely aligned. As in other commodities, mine closures or operation problems or reduction in output is rarely announced as are new developments. The major iron ore producers have stated that they will attempt to avoid a market over-supply. CVRD and BHP Billiton have stated that they would be willing to produce below their full capacity utilization rates in order to maintain a balanced market in case there is a significant drop in demand. Despite these statements, there are several companies seeking to develop on-the-shelf resources. Profitable development and expansion of these projects will be dependent upon the quality of the resource potential.

Over the past two decades, steel companies have focused their purchases on iron ore products with specific characteristics to maximise productivity in the blast furnace. The strength of the buyer (steel companies) allowed them to force the iron ore companies to develop a better quality product with low deleterious elements and specific metallurgical properties. More recently, the iron ore producers, primarily the big three, have limited their sale products to several standardised products. Output from a specific mine is limited and considerable blending occurs. Quality remains consistent, however the shift in power has moved to the sellers (iron ore producers). China is less concerned with quality presently, however this will change in the very near future. The move towards quality iron ore products remains a constant in the future. This bodes well for Baffinland as a high grade lump and sinter product will be well received by the steel producers, particularly European steel mills.

Analyst reports and published reports continue to debate the future of the iron ore markets, particularly the supply and demand of the various iron ore products. In the late 1970's and early 1980's, the future of the Blast Furnace was questioned and it was hypothesised that the EAF process using recycled scrap steel and directly reduced iron as feedstock would become the dominant method of steel production. The challenge is that the EAF process does not improve the quality of the feed stock and if poor quality scrap was used, a poor quality product was produced. In addition, DRI products, primarily pellets and some lump, have limited suitable resources due to the extremely tight quality specifications of the feed stock. DRI and HBI products total some 55 million tonnes of the total world production of iron ore or less than 5% of output. Several processes are being or have been developed to perhaps replace the blast furnace as the primary method to produce hot metal (pig iron). These processes include the HISmelt, Corex, MBF, DIOS, AISI, CCF, Tecnored, Romelt and AusIron. Of these processes, only the Corex has developed a commercially viable operation.

**Primary Competitors in the World Markets**

| Company | Location | 2006 Shipments (Mt) | Product | Primary Customer |
|---|---|---|---|---|
| CVRD | | | | |
| North System | Brazil | 264 | Fines, Pellets, Lump | Europe, Asia, USA |
| South System | Brazil | | Fines, Pellets, Lump | |
| MBR | Brazil | | Fines, Pellets, Lump | |
| Samarco | Brazil | | Pellets, Fines | |
| Rio Tinto | | | | |
| Hamersley Iron | Australia | 167 | Fines, Lump | Asia, Europe |
| Robe River | Australia | | Fines, Lump | Asia, Europe |
| Iron Ore Company | Canada | | Pellets, Fines | USA, Europe |
| BHP Billiton Iron Ore | | | | |
| | Australia | 115 | Fines, Lump | Asia, Europe |
| Samarco | Brazil | | Pellets, Fines | |
| LKAB | Sweden | 23 | Pellets, Fines | Europe |
| SNIM | Mauritania | 11 | Fines, Pellets, Lump | Europe, Asia |
| CVG | Venezuela | 22 | Fines, Pellets | Europe, Local |
| Kumba | South Africa | 32 | Lump, Fines | Asia, Europe |

Note: shipments include non-seaborne iron ore trade; above producers are dominant into European Markets Source: Annual Reports, Skillings

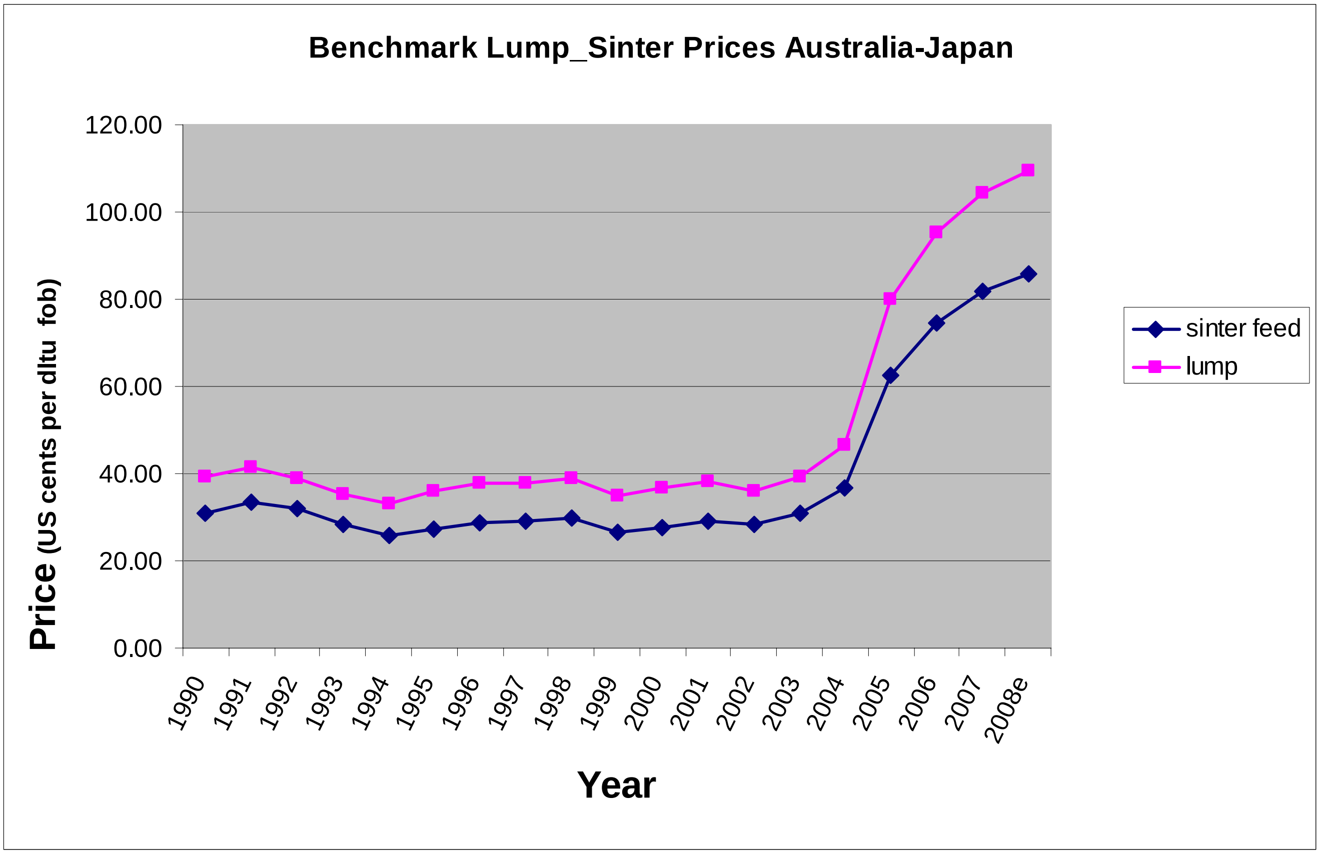
Iron ore prices are set each year in complex negotiations led by one of the three dominant iron ore producers RTIO, BHPBIO or CVRD and the steel producers. These prices form the basis for prices received by other producers, based upon deleterious elements, moisture content, degradation index (fine generation during handling), and how the ore behaves in the blast furnace. European prices are often quoted CIF (or DES), including cost, insurance and freight to European ports, while Japan prices are quoted FOB, free on board to the mine's terminal port. Penalties can be severe for high concentrations of deleterious elements such as phosphorus, base metals, sulphur, alkalis, silica, alumina and titania oxide or for failing to meet physical specifications such as percentage of fines or ultrafines. Historically, reported 'hidden' price discounts applied to long-term contracts that were difficult to document. These discounts were applied to the negotiated price when contract volumes exceeding specific amounts. Over the past 20 years, these discounts have disappeared except in China, where it has been reported that RTIO, CVRD and BHPBIO were initially discounting (2-3%?) to achieve market penetration. The discounting, although now virtually non-existent, remains a leverage tool and a sign of the relatively closed market of the iron ore trade. It also emphasises the importance of a quality iron ore product and a strong technical understanding of the market issues.

Prices for iron ore sale products settle based upon the benchmark price for fines, lump and pellets. Those products with higher levels of impurities, moisture or higher generation of fines in lump ores or ultrafines in fines will be discounted from these benchmarks. Many steel mills accept certain deleterious elements to acquire a specific property in an iron ore product. The steel mills want consistency and predictability in iron ore products for their blast furnaces.

As stated previously, iron ore production is in three forms; pellets, lump and fines for sinter feed. Fines (-6.3mm) are used as sinter feed the most common burden for blast furnaces. Sinter is friable and cannot be transported far thus sinter plants are close to steel mills. Pellets are highly variable in composition, as individual steel mills will request the specific characteristics and composition required. Many mining operations have pelletising plants at the mine site or near its terminal port.

Japanese steel mills have pelletising plants on-site, but will also import pellets with very specific composition. Growth in China has seen considerable pellet capacity added, but it will require imported concentrate to feed the plant. CVRD is increasing pellet capacity to deal with the increasing ultrafines generated in its operations. Lower iron content and reduced quality of sinter feed and the lower availability of quality lump ores have renewed the expectation that pellets will begin to take market share. Pellet plants are capital and energy intensive, but it remains the only method for creating a blast furnace charge from fine grained iron ores (ultrafines or concentrate; grain size $< 150$ µm).

There is also considerable debate over what China will do to decrease its reliance on imported ores. As much of China's iron ores are not amenable to easy upgrading, pelletising may not reduce import demand. There has been speculation that China would buy ultrafines/concentrate on the open market, particularly from potential future Australia producers.




Source: UNCTAD, Macquarie, Roskill

Lump, simply defined, is naturally occurring 'pellets' requiring simple crushing and screening before shipment. It must meet strict minimum chemical characteristics, generally 62+% Fe, as it is not processed and forms a direct charge to the blast furnace. More importantly it must meet specific physical characteristics. Once crushed to –31.5mm+6.3mm (-1¼ inch +¼ inch) in size, it must not degradate during handling. It commands a premium to fines (-6.3mm) and does not require grinding and processing that is required to produce pellets. All blast furnaces use a variable combination of sinter, lump and/or pellets as input or direct charge. Individual blast furnaces are extremely variable in their direct charge composition. Generally, the US steel producers use 75+% pellets in their blast furnaces while the rest of the world uses sinter feed (65+%) as a dominant burden charge.

The majority of blast furnaces increasingly blend and mix the types of ores used as direct charge to reduce swelling, increase throughput, reduce energy cost, reduce coke consumption and generally improve the steel making process while reducing pollution and environmental concerns. Although, specific charge mixes can vary dramatically, the average blast furnace mix is estimated as follows:

**Average Charge Mix in the Blast Furnace (mid 1990's)**

| Region | Lump | Pellets | Sinter |
|---|---|---|---|
| USA | 3% | 80% | 17% |
| Europe | 15% | 19% | 66% |
| Japan | 19% | 16% | 65% |

Source: Ullmans

Lump has a significant price advantage over pellets, being ~20% cheaper. Despite this advantage, there are strong views amongst the world's steel mills on cost and productivity advantages of the various blast furnace charge mixes.

There remains an increasing demand for a new quality lump ore supply. Two of the main sources, the BHPBIO and RTIO's Brockman lump ores in the Pilbara of northwest Australia are being depleted. As mining depths increase, the ores are becoming softer and moisture content increases. Output is shifting to the Marra Mamba lump ores, but they are softer, have a lower lump content, are lower grade and contain approximately 8-10% moisture. This translates to an approximate 10% loss in the value of each tonne of ore shipped as Marra Mamba replaces Brockman as the primary Australian source of lump iron ore. Brazil is running out of lump ore and is expected to stop shipping Carajas lump product into Europe by 2008-2009 and there will be limited South System lump after 2012-2013.

**Primary Sources of Seaborne Traded Lump Ore**

| Source | % Lump/Fines | % Fe | Comments |
|---|---|---|---|
| Brockman, Australia | 45/55 | 63.0 | Major supply of lump for 35 years, lump being mixed with Marra Mamba ores |
| Yandi, Australia | 5/95 | 58.0 | Primarily sinter feed |
| Marra Mamba, Australia | 35/65 | 60.5 | Low P, softer ore, lower Fe levels |
| Carajas, Brazil | 5/95 | 64.5 | Ore platy and subject to degradation |
| Sishen, South Africa | 60/40 | 66.0 | High alkali ore, demerit in price, although penalty has been reduced for lump from 28% in 1992 to 14% in 1999. Fines demerit has remained constant at 20%. |

Source: Annual Reports, Skillings

In 1983 lump output totalled 107.5 million tonnes, representing 44.8% of the seaborne trade and 25% of total world iron ore supply. By 1999, lump output totalled just 77.1 million tonnes, representing just 19% of the seaborne trade and 7.6% of world output. The market should quickly absorb any new supply of lump at the expense of pellets. In addition, lump will supplement the burden mix where the producer is unable to maintain sinter output. Sinter plants cannot increase output in the short-term to deal with increased demand and pellets require expensive processing to produce.

In the early 1980's, many iron ore producers, mainly North American, forecasted that pellets would dominate future growth in the iron ore market. This has failed to materialise due to several factors: the high energy cost of grinding the fine grained taconite/itabirite ores to produce concentrate/ultrafines, the high energy required the pelletising process; the high capital cost of building a pellet plant; and the stringent and consistent specifications of feed required to produce a quality pellet. Many of the coarser higher grade iron ores (40-50%) do not always produce a quality pellet.

Importantly, only hematite ($Fe_2O_3$) or magnetite ($Fe_3O_4$) can be easily physically beneficiated. Ores that are dominantly goethite (FeOOH) or limonite (α-FeOOH) cannot. These minerals reportedly form much of the China's iron resources and can only be upgraded through the calcining or sintering process. This is not a cost effective beneficiation method at the mine site and only occurs at the steel mill. Sintering remains the most efficient and effective process for making a direct charge to blast furnace, the initial part of the iron and steel making process.

Price increases have not yet slowed demand for iron ore products in the short-term as virtually all iron ore production has been bought and steel mills, particularly the Chinese, have been scouring the world for new sources of quality iron ore. Chinese companies have been seeking raw material investment opportunities, particularly in Africa.

Forecasting long-term prices continues to be a challenging task. Short-term market changes such as build up in steel inventories for car manufacturers cause some analysts to revise their estimates several times in 2005. Each new economic or industrial statistic is examined for as a future indication of where the market is headed. A tabulation of long-term forecasts is as follows:

**Long-term Price Forecasts Iron Ore**

| Company | Basis (FOB/CIF) | Lump (US¢/dmtu) | Fines (US¢/dmtu) | Date of Estimate | Notes |
|---|---|---|---|---|---|
| Canaccord | FOB | 77.3 | 59.7 | 2006/06/30 | Revised estimate, long-term price post 2010 |
| First Associates | FOB | 60.0 | 45.0 | 2005/01/20 | Price post 2010 |
| UBS | FOB | 51.9 | 40.7 | 2005/07/23 | Average for 2010-2015, taken as long-term |
| CRU | FOB | 72.6 | 57.4 | 2006/06/30 | Average for 2010-2020 taken as long-term |
| Hartley | FOB | 67.5 | 52.9 | 2006/09/01 | Price post 2010 |
| SRK | FOB | 50.0 | 41.0 | 2006/10/09 | Price post 2010, for Kumba Valuation |
| Macquarie | FOB | 57.4 | 45.0 | 2006/10/09 | Price for fines, assumes historical lump premium |
| Merrill Lynch | FOB | 73.4 | 57.5 | 2007/04/30 | Price for fines, assumed historic percentage increase for lump/pellets. Long-term price post-2013 |

Most of these estimates have not been revised or updated using the 2006 price increase. In addition, many of the estimates have not been increased despite forecasts of increased demand for iron ore, particularly China and India. Some have been used in Net Asset Value calculations of future producers or as part of a valuation exercise. Despite the variation, there is a consistent theme that the industry will remain *stronger for longer*. The consensus that benchmark price (sinter feed and lump) will claw back from some future price level. The consensus forecast for the near future has prices increasing 10% to 12% in 2008 and an expected 5% in 2009.

Merrill Lynch increased its long-term forecast for fines by 30% to 57.5¢ per dmtu. This forecast is the first that incorporates all available market information over the past eighteen months. Many industry and market analysts have forecasted increased iron ore consumption in China and India and have also changed near-term price forecasts with increases in 2008 and no significant downturn in prices until 2010 to 2012. Despite these changes, few have modified long-term price forecasts. Many have maintained forecasts made in early 2005 that included an expected price decrease in 2006 after the historic 2005 increase.

The long-term price speculation appears to agree that it will settle around the 2005 benchmark. Ignoring specific arguments about price premiums for specific iron ore products (lump, pellets and fines/sinter feed), there is a common conclusion that the steel mills will continue to seek quality ores and those producers with quality sale products will and continue to prosper.

## GLOSSARY

**Blast Furnace** A furnace for the smelting of pig iron from iron oxides; combustion is intensified by a blast of air and/or other inert gases

**Beneficiation** The process of separating, concentrating and classifying ore by particle size and or some other characteristic (e.g. specific gravity, magnetic susceptibility, surface chemistry, etc.) in order to obtain the mineral or metal of interest.

**CIF** Cost/customs, insurance and freight. Price of a bulk commodity delivered to a customer's terminal port. Price includes shipping cost and is the common quoted price to bulk commodities sold in Europe. Also known as C&F.

**Concentrate** Very fine grained (less than 0.15 mm or 150 µm) particles of iron ore (ultrafines) generated by mining, grinding, handling and transporting of iron ore, with no practical direct application in the steel industry, unless the material is aggregated into pellets through an agglomeration process. In many iron ore deposit, it is necessary to grind the mineralization finely to liberate the iron minerals.

**DRI** Direct Reduced Iron. Process that converts iron ore into DRI or HBI using natural gas or coking coal without melting. DRI or HBI by-pass the blast furnace stage in the steel making process.

**DWT** Deadweight tonnes. The measurement unit of a vessel's capacity for cargo, fuel, oil, stores and crew, measured in tonnes or 1,000 kilograms. A vessel's total deadweight is the total weight that the vessel can carry when loaded to a particular load line.

**Fe Unit** A measure of the iron content in the iron ore that is equivalent to 1% iron content in 1 tonne or iron ore. The two most commonly used units are the dry long tonne unit (dltu) or 22.4 pounds and dry metric tonne unit (dmtu) or 10 kilograms (22.046 pounds). The dry measure discounts the internal moisture of the iron ore being shipped.

**Fines (Sinter Feed)** Refers to iron ore with particles in the range of 0.15 mm and 6.3 mm in diameter. Suitable for sintering.

**FOB** Free on board. Price of a bulk commodity delivered to producer's terminal port. Price excludes shipping and is the common quoted price to bulk commodities sold in Asia.

**Hematite** An iron oxide mineral whose composition is $Fe_2O_3$ and stoicheiometric maximum iron content is 69.94% iron (Fe).

**HBI** Hot Briquetted Iron. Direct reduced iron that has been processed into briquettes. Instead of using a blast furnace, the oxygen is removed from the ore using natural gas and results in a substance that is 90-92% iron. Because DRI (direct reduced iron) may spontaneously combust during transport, HBI is preferred when the metallic mineral must be stored or moved.

**Long Ton** A unit of measure in bulk commodities equivalent to 2,240 pounds.

**Long Tonne Unit** A unit of measurement used in the iron ore industry for the sale of iron ore. It is equal to 1% iron content in a long ton of ore or 22.4 pounds. Quoted a dry long ton unit (dltu).

**Lump** Iron ore with the coarsest particle size in the range of 6.3 mm and 50 mm, with the preferred range between 6.3 mm and 31.5 mm.

**Magnetite** An iron oxide mineral whose composition is $Fe_3O_4$ and stoicheiometric maximum iron content is 72.36% iron (Fe).

**Mineral Deposit** An identified in-situ mineral occurrence from which valuable or useful minerals may be received. Mineral deposit estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence of mineralization and on the available sampling results.

**Mineral Reserve** That part of a measured mineral resource or indicated mineral resource which can be extracted legally and at a profit under economic conditions that are specified and generally accepted as reasonable by the mining industry and which is demonstrated by a scoping study or feasibility study.

**Mineral Resource** Under CIM Standards, a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources fall under the following categories: measured mineral resource; indicated mineral resource; and inferred mineral resource.

**Ore** The concentration of metals and their chemical compounds within a body of rock that can be exploited profitably under current economic conditions.

**Pellet Feed (ultra-fines)** Very fine grained (less than 0.15 mm or 150 µm) particles of iron ore generated by mining, grinding, handling and transporting of iron ore, with no practical direct application in the steel industry, unless the material is aggregated into pellets through an agglomeration process

**Pellets** Agglomerated ultra-fine iron ore particles of a size and quality suitable for particular steel making processes. Pellets generally range from 8 mm to 18 mm in size with the preferred size between 12.5 mm and 15 mm.

**Pig Iron** Melted iron produced in the blast furnace

**Reducibility** The reduction of iron oxide to eventual pig iron through the liberation of oxygen.

**Seaborne Market** Comprises the total iron ore trade (imports and exports) between countries using ocean bulk vessels.

**Sinter Feed (Fines)** Refers to iron ore with particles in the range of 0.15 mm and 6.3 mm in diameter. Suitable for sintering.

**Sintering** Refers to the agglomeration of small particles into a coherent mass by heating without melting.

**Specularite** A variety of hematite characterized by aggregates of silvery, metallic, specular hematite flakes or tabular, anhedral crystals. Also referred to as specular hematite.

**Ton** Short ton (2,000 pounds).

**Tonne** A unit of measure equal to 1,000 kilograms or approximately 2,204.6 pounds

**Ultra-fines** Very fine grained (less than 0.15 mm or 150 µm) particles of iron ore generated by mining, grinding, handling and transporting of iron ore, with no practical direct application in the steel industry, unless the material is aggregated into pellets through an agglomeration process. In many iron ore deposit, it is necessary to grind the mineralization finely to liberate the iron minerals. Also referred to as concentrate.