

UBS Investment Research

UBS Global I/O: Iron Ore

Global

Mining & Metals

Sector Comment

Testing the bearish iron ore consensus

■ Consensus price collapse

The consensus on the iron ore market is that we are facing a wall of new supply. Consensus has iron ore prices halving over five years, with a 30% drop from current spot in 2011. What we question is when, if ever, and at what cost, this material comes to the market?

■ INPUT: Delays, cost escalation and demand

This note tests the consensus assumptions; we look at the potential for rising capex costs, for project delays and for demand to exceed what we see as conservative consensus expectations.

■ Upside risk to long-term prices

We conclude that, under what are quite realistic assumptions, the iron ore market could remain very tight for four years, and that the market could upgrade its long term price expectations by 20% in two years time.

■ OUTPUT: Value upside

The stocks would be very sensitive to such an outcome. Rio Tinto (Key Call) is trading at a 25% discount to fair value at present. But that fair value could rise by 20% if consensus raises short and long term price assumptions. That would give Rio's scope to rise 60% to reach fair value on a two year view. We also highlight Buys on Ferrexpo, BHP Billiton and Fortescue.

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www.ubs.com/investmentresearch

Julien Garran

Analyst

julien.garran@ubs.com

+44-20-7568 3540

Tom Price

Analyst

tom.price@ubs.com

+612 9324 2189

Olivia Ker, CFA

Analyst

olivia.ker@ubs.com

+44 207 568 4117

Rene Kleyweg

Analyst

rene.kleyweg@ubs.com

+4420 7567 7174

Glyn Lawcock

Analyst

glyn.lawcock@ubs.com

+61-2-9324 3675

Fawzi Hanano

Analyst

fawzi.hanano@ubs.com

+44-20-7568 1935

Table 1: Exposure and sensitivity to iron ore

Company	Iron ore exposure*	Iron ore price sensitivity**
BHP	35%	6%
Rio Tinto	60%	9%
Ferrexpo	100%	19%
Fortescue Metals Group Ltd	100%	16%
Mount Gibson Iron Limited	100%	17%
Gindalbie Metals Ltd	100%	NA
Vale	80%	10%
MMX Mineração e Metalicos	100%	37%
ENRC	48%	7%
Anglo American	28%	3%
Vedanta	17%	4%

Source: *% of 2011 EBITDA from iron ore, **Change in 2011 EPS for a 10% change in iron ore price

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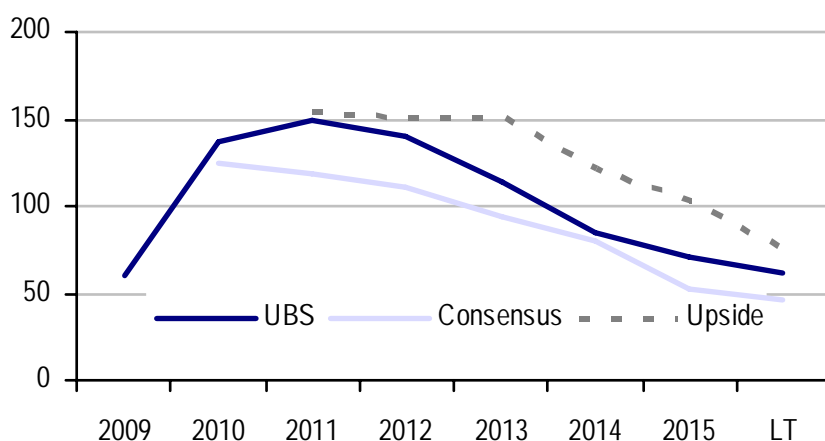
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Iron ore – testing the bearish consensus

The consensus on iron ore is unequivocally bearish. Analysts are anticipating a wall of new supply. And their price forecasts reflect that; consensus is calling for a 25% fall in prices to US\$120/t in 2011, from current spot at US\$153/t. Consensus then goes on to forecast that long-term prices more than halve to US\$60/t by 2015.

The three major producers Vale, BHP & Rio Tinto have potential expansion plans totalling 265 Mt by 2015, which should, on paper, move the market into significant surplus. What we question is when, if ever, and at what cost, this material comes to the market? Given the multi billion dollar investment required to bring on new capacity, in our view, producers are inclined to keep the market tighter for longer, as opposed to bringing on new capacity.

Chart 1: Consensus and UBS price forecasts, plus upside on RGP5 delay



Source: Metal Bulletin, UBS

In this note we challenge consensus on three fronts; we look at the potential for project delays, we look at capex inflation, and we look at the potential for demand to outrun what are very conservative assumptions.

The first point is to look at our base case forecasts that we published in 'Game changer' 18th October, 2010.

Table 2: Current iron ore Supply & demand – and impact of RGP5 delay

		2010e	2011e	2012e	2013e	2014e	2015e
Total seaborne iron ore demand	Mt	1,018	1,085	1,155	1,196	1,276	1,321
YoY growth	%	12.0%	6.6%	6.4%	3.5%	6.7%	3.5%
Total seaborne iron ore supply	Mt	1,009	1,079	1,158	1,252	1,383	1,488
YoY growth	%	12.0%	6.9%	7.3%	8.1%	10.4%	7.6%
Seaborne Balance	Mt	-9.3	-6.3	3.0	56.5	106.9	167.5
1 yr delay & slower ramp-up of RGP5							
Total seaborne iron ore supply	Mt	1,009	1,079	1,142	1,225	1,352	1,462
YoY growth	%	12.0%	6.9%	5.8%	7.3%	10.4%	8.1%
Seaborne Balance	Mt	-9.3	-6.3	-13.1	29.3	76.5	140.7

Source: UBS, Metallurgy

The first gray line shows that we forecast a deficit in 2011, a neutral market in 2012, and then much looser markets from 2013.

But within one week of our forecast, BHP announced, quietly, a delay, and a slower ramp up at its Rapid Growth Project 5 (RGP5). This is significant, as RGP5 was to contribute 40% of total production growth over the next three years.

Why did BHP delay the project? Principally due to a delay at its subsequent growth project RGP6. Under the original design, RGP6 was to follow RGP5 within 1 year, so as RGP5 was ramped up, it could utilise the additional car dumper/ship loader that was being constructed as part of RGP6. Escalating capital costs in Western Australia, appear to be the key driver of the delay. In addition, perhaps BHP anticipated it would have the potential to use the now defunct Rio/BHP JV port assets to facilitate shipping. And in part, it may be related to supply growth elsewhere.

But whatever the cause, the impact on the iron ore market will be substantial. The second grey line shows that instead of a neutral year in 2012, the market falls into a significant deficit, and the surplus for 2013 is halved.

The next question to ask is whether there is a risk that the ‘wall of supply’ scheduled for 2013/2014 is subject to delay.

Our central areas of focus here are capex costs and bottlenecks, availability of funding and environmental permissions.

We understand that capex costs are running around 20-25% up yoy. Engineering staff salaries are rising at around those levels, and then premiums for relocation are rising more quickly again. Capital equipment is running at increasing lead times. Bottlenecks for key equipment are also rising. And funding issues remain for smaller inexperienced players. Rene Kleyweg, UBS’ Vale analyst highlights that Chinese backers are reluctant to be sole investors in start-up projects – and would prefer to be partial backers with other significant equity partners as a sign of confidence in new projects. This blow-out in delivery times, rising costs and

struggles with funding poses a genuine threat to schedules – particularly at the less experienced developers.

Key projects

Western Australian magnetite – current forecast 40mtpy ramp up starting in 2014.

The Western Australian magnetite producers; Murchison's Jack Hills, Sinosteel Midwest's Weld Range projects and Gindalbie Metals' Karara are all dependent on the development of the A\$4.3bn port and rail Oakajee port project. Murchison Metals, which owns half of the rail and port project, announced on November 4th that it needed additional time from the WA government to complete a final bankable feasibility study on the project by Q2 2011. It has warned that the project will not be ready until 2015. This threatens to delay, or even scupper, the development of the magnetite deposits in Western Australia. At present, we have a 40mt ramp-up from these projects factored into our model from 2014.

Vedanta/Sesa Goa – current production 22mtpy – company target 50mt in 2-3 years. Our forecast 44mt by 2015.

Environmental obstruction has caused the delay and potential cancellation of alumina/aluminum and copper projects in India – and bureaucratic intervention may threaten production growth in iron ore going forward.

Indian iron ore production has been falling steadily this year. Production has fallen from 22.4mt in April to 14.3Mt in August. April to August production is down 7% y/y. The strong monsoon, higher taxes and the ban on iron ore exports from Karnataka province has hit production and export volumes. Consequently, there has been little export pick-up after the traditional seasonal slowdown over the monsoon season. There are concerns that the export ban may last several more months. c20% of Vedanta/Sesa Goa's production and expansions are in Karnataka.

The expansions are also completely dependent on environmental permissioning. Currently Sesa Goa has environmental clearance for 25mtpa of iron ore capacity. (6mt in Karnataka, 2mt in Orissa and 17mt in Goa). They expect further progress on the clearances once the Goa Mineral/Mining Policy gets announced, but there have been no announcements to date and there is no clarity on the timeline. Management has set a target of reaching 50mt by FY2013 (30mt in Goa, 10mt in Karnataka, 10mt in Orissa); however we believe this may be at risk and we estimate production to peak at c44mtpa in FY2015.

Vale's Serra Sul expansion in Carajas – 90mtpy, in three tranches – with start up envisioned in 2014

This project has been held up already by environmental permissioning issues. Vale already has equipment ordered and consultants on the ground – so costs are rising, but Rene Kleweg does not anticipate meaningful delays from rising equipment/contractor lead times. Vale's CEO Roberto Agnelli has recently stated that there is increased visibility on permitting. Rene's insight into the Vale strategy is that it will bring on the capacity in line with market conditions – it will not expand sufficiently to knock out the high cost production in China,

and so it is likely to slow output to ensure that pricing remains above US\$120/t in 2014 and 2015.

Vale's Simandu project remains tentative, and we do not expect to see production before 2016, however, 12m tonnes from the smaller, related, Zogota operation is expected online from 2013.

Last week Vale announced as much as 45mtpy of additional brownfield additions from 2014. We anticipate that environmental permissioning will be easier for brownfield expansions, and port and rail extensions will be less onerous on a strained capital equipment market. We have factored these into our model.

Anglo American's Minas Rio – 26mt by 2015

Minas Rio, the Anglo American venture, is suffering delays of around 18 months, related to a more stringent environmental permissioning processes in Brazil & project design changes. Latest reports from the company indicate that the mining permit has been submitted & approved, as well as the technical permit. The next permit Anglo must now obtain is the second plant installation licence, which Anglo believes could be achievable over the next three months. Assuming all permits are received by March 2011, Minas Rio should commence production in Q3 2013.

ENRC's Kazakhstan and Brazilian projects

ENRC currently produces c17mt of iron ore from its Kazakhstan-based operations. However, through a combination of organic growth and greenfield projects in Brazil, there is scope for ENRC's total iron ore production to reach c70mtpa by 2020. Management has approved an expansion of the Kazakhstan operations to c24mtpa by 2014, inclusive of new HBI production.

The real upside to ENRC's iron ore growth aspirations lies in their Brazilian projects: Bahia Minerals and Jiboia. In September ENRC acquired the remaining 50% stake in Bahia Minerals, a project with indicated resources of 932mt at 32% Fe and we forecast the project to add 19.5mtpa of production capacity by 2016. ENRC management reports that environmental licences for the mine and plant have been obtained, but there is no clarity on port licences and contracts for railway capex. ENRC further increased its Brazilian iron ore exposure through the acquisition of the rights to the Jiboia project in October. The project has indicated resources of 824mt at 27% Fe and can potentially add c25mt to ENRC annual production by 2020; however we await completion of the feasibility study and board approval before including it in our base forecasts.

MMX – 44mt in projects.

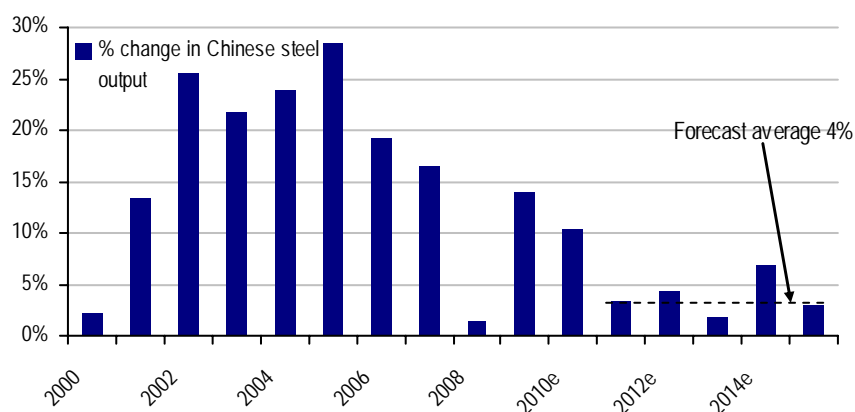
The MMX projects have already been delayed by 12-18 months and the company is struggling with permits. Rene Kleyweg believes that, with the new government in place, and new appointments, that the permitting logjams of the last two years may ease from Q2 2011, although clearly visibility is poor. We anticipate production ramp up from late 2013.

We suspect that permissioning issues should ease somewhat for Brazilian projects that have already seen significant delays. We expect Vale to avoid major equipment and contractor bottlenecks, although many of the smaller projects are yet to enter the capital intensive construction phase of projects and it remains to be seen whether these issues bite. We suspect that they will.

The demand factor

The next and critical issue is intensity of steel demand growth. At present, the consensus for China's steel production growth is for 4% from 2010-2015. This follows from 10% annual demand growth from 2000-2010. Consensus global steel consumption forecasts are for 3.5-4% for 2011-2015.

Chart 2: Historical and forecast China steel production



Source: UBS estimates, CEIC

We believe that it is worth testing this assumption.

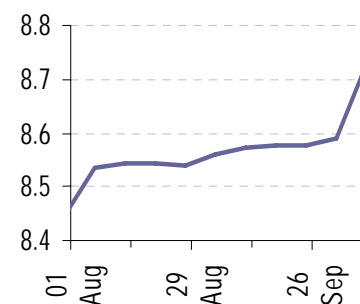
From the top down, we suspect that the global 3.5-4% steel demand assumption may prove to be a significant underestimate of trend.

In our report 'Game Changer', 18th October, we highlighted that QE2 would induce significant capital flows into emerging markets – and that those had already started in the run up to QE2.

This would boost liquidity, lending and steel intense construction and fixed capital formation.

Moreover, the capital flows will augment an already powerful structural leveraging story in emerging markets.

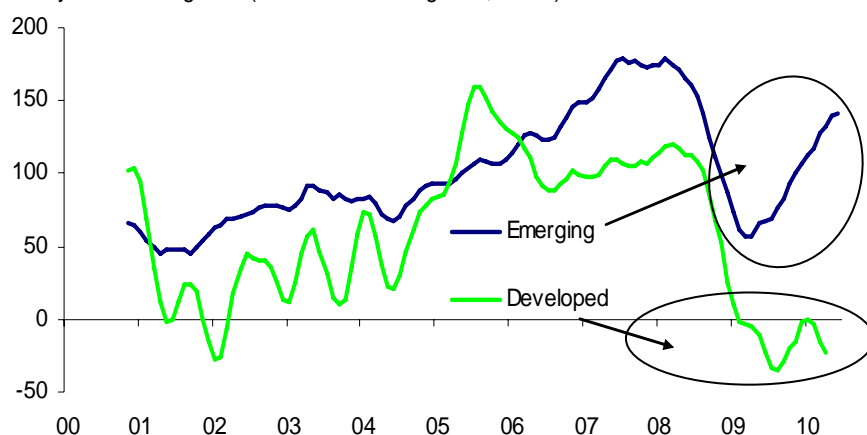
Chart 3: World FX reserves (US\$tn)



Source: Bloomberg

Chart 4: Emerging market releveraging

Monthly new lending/GDP (index 2004-06 avg=100, 3mma)

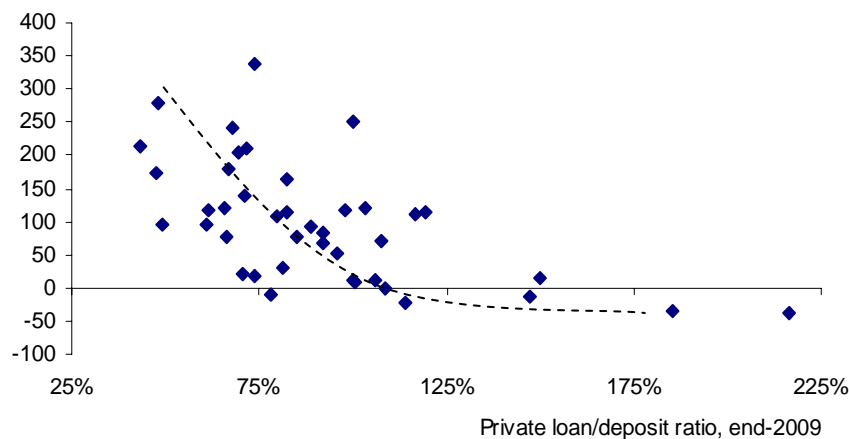


Source: IMF, Haver, UBS estimates.

Jonathan Anderson, our EM economist, highlights that it is actually the least geared emerging market economies that have seen the greatest increase in leverage – a sure sign of the structural element of the story – based on the superior balance sheets of the majority of emerging market consumer and government sectors.

Chart 5: The countries with the lowest loan to deposit ratios are relevering fastest

Latest relevering index reading (June-August 2010)



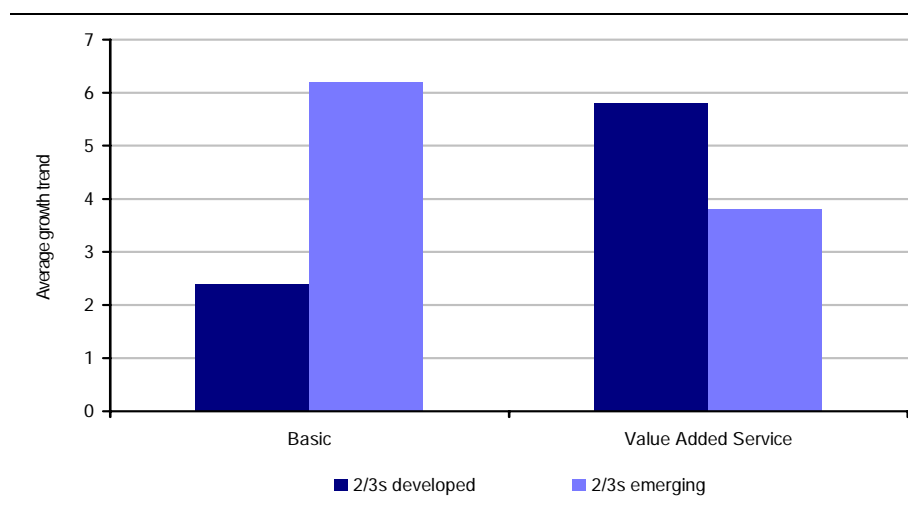
Source: IMF, Haver, CEIC, UBS estimates.

In short, QE2 raises the already strong growth outlook for emerging markets.

At the same time, the US and the rest of the developed world remain constrained by weak consumer and government balance sheets. William Dudley of the New York Fed highlighted that in a normal recovery, the US consumer takes over the baton of growth following a restocking bounce. This time the US consumer has decided to save to pay down debt. And rising commodity prices are forcing consumers to spend more on gasoline, food and clothing – crowding out discretionary spending to some degree. Developed world growth will likely remain constrained for some time.

The key issue here is that a dollar of growth in emerging markets consume around 6-7x the commodities of a dollar of growth in the US. And our modelling of commodity intensity in 'The US\$13,000 Question' 16 September, 2010 highlights what happens to steel demand trends when two thirds of global growth comes from the developed world (it grows 2.2% globally – like in the late 1990s). When 2/3rds of global growth comes from the emerging markets, global steel demand trends at around 6.2% - as it did from 2003-7.

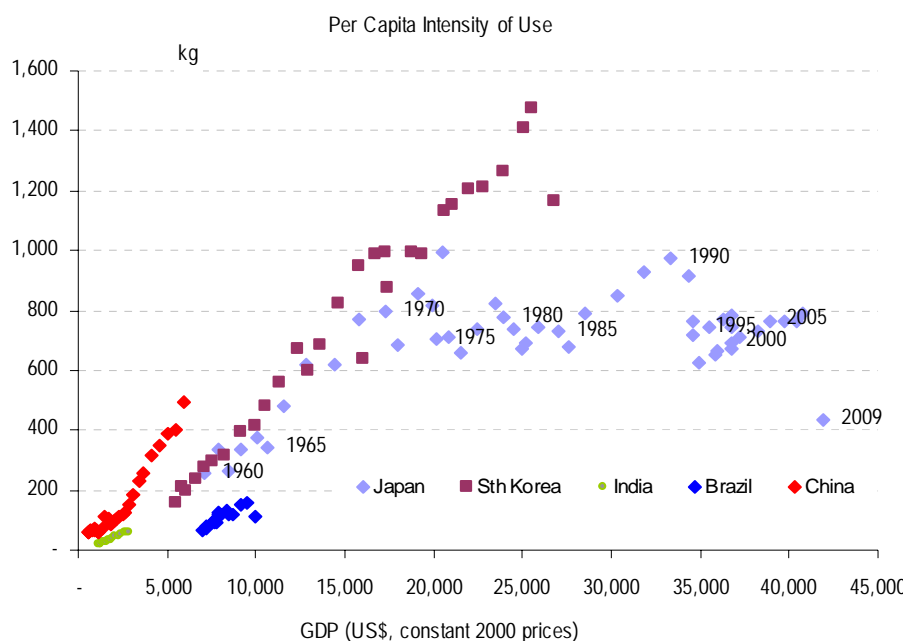
Chart 6: Trend growth in basic materials demand



Source: UBS estimates

At the very least, this suggests significant upside risk to the consensus forecasts.

In the US\$13,000 question, we also went into detail on the factors that have driven China's early and rapid growth in steel intensity, and how long those drivers had to run.

Chart 7: Crude steel intensity per capita

Source: World Bank, Brook Hunt, CRU, CEIC

The key driver was re-urbanisation – the knocking down of pre-reform era building and their replacement with new central business districts, while the previous occupants moved to new blocks of flats in the suburbs.

We highlighted that this process has some way to run (the 50m inhabitants of tier one cities had likely hit peak steel demand, but there was considerable scope for the other 580m city dwellers to see rising steel intensity). There is also political will. A key aspect of the 12th five year plan, starting in 2011, highlights a desire to urbanise inwards and into smaller cities. This is a core policy of the China communist youth league, where Hu Jintao and Premier in waiting Li KaQiang have their power base. Finally, the liquidity provided by QE2 should also ensure that the capital will be available to achieve this drive.

Our conclusion was that China steel intensity would not peak until 2015.

This reinforces our view that there is significant upside risk to consensus demand numbers.

If we assume 6% Chinese steel production growth rather than 4%– the result is powerful. The global iron ore market remains in substantial deficit in 2011, 2012 and 2013 and then it remains tight in 2014 and 2015.

Consequently, under reasonable demand assumptions, the iron ore market will see a continuation of high – US\$150/t pricing for the next three years, and then pricing fading towards the Chinese marginal cost of production in 2014/15.

Table 3: Summary iron ore supply & demand, and after adjustment for production delays and stronger Chinese demand

		2010e	2011e	2012e	2013e	2014e	2015e
Total seaborne iron ore demand	Mt	1,018	1,085	1,155	1,196	1,276	1,321
YoY growth	%	12.0%	6.6%	6.4%	3.5%	6.7%	3.5%
Total seaborne iron ore supply	Mt	1,009	1,079	1,158	1,252	1,383	1,488
YoY growth	%	12.0%	6.9%	7.3%	8.1%	10.4%	7.6%
Seaborne Balance	Mt	-9.3	-6.3	3.0	56.5	106.9	167.5
After adjusting for RGP5, Oakajee delay, Value brownfield boost, 6% China steel production growth							
Total seaborne iron ore demand	Mt	1018	1114	1201	1288	1365	1450
YoY growth	%	12.0%	9.4%	7.8%	7.3%	6.0%	6.2%
Total seaborne iron ore supply	Mt	1009	1079	1136	1220	1361	1491
YoY growth	%	12%	7%	5%	7%	12%	10%
Seaborne Balance	Mt	-9.3	-34.7	-64.9	-68.8	-4.5	40.7

Source: UBS, Metallytics

Upside risk to long term prices

The next question is long term pricing. At UBS we follow a very rigorous process to identify long term inducement prices – identifying all potential projects and their capex and operational costs, and then applying a 15% inducement premium to the 80th percentile of new projects to find long term inducement prices. We established a long term price of US\$63/t. This is not far from consensus.

However, should capex costs rise at the 20-25% pace that we anticipate, and further bottlenecks and delays to marginal projects emerge, it is entirely probable that consensus will raise its expectations for long term prices from the low US\$60s to the low-to-midUS\$70s in two years' time.

To calculate this, we used the following stripped down model; we look at the current standard capital costs, and the likely increase in capital costs vs expectation over two years. We then calculate the additional return requirement using a 15% hurdle rate requirement. We then add additional operating cost pressures at the mine – the overall increase in inducement prices is US\$12/t – which would take our long term price expectation up from US\$63/t to US\$75/t.

Table 4: Long term price sensitivity to rising capital and operating costs

Current Capital costs/t	110
Capex Cost Increase	25%
per Ton	27.5
Additional cost per ton (30 year mine life)	0.92
Additional return requirement 15% WACC	6.88
Additional maintenance costs (3% of capex)	0.825
Total capex impact on incentive price	8.62
Opex cost pressures	25%
cash cost at 80% percentile	35
% related to mining	40%
Implied impact on incentive price	3.50
Total Impact (US\$/t)	12.12

Source: UBS estimates

Furthermore, we expect prices to revert to their long-term level by 2015. Put another way, we expect supply & demand to reach equilibrium within 5 years. This is highly dependent on the speed at which the producers bring new capacity to the market.

Valuation on the stocks under our coverage would be very sensitive to such an outcome – although we note that any sensitivity analysis would have to factor in both rising cost pressure generally, but also delays and capex cost increases as well. Consequently, the greatest benefactors from a capex cost driven increase in prospective long term pricing would be the big-3 incumbent producers, and the companies that would see margins most eroded by costs would be the new entrants.

Stock sensitivity

Table 5: Upside scenario iron ore forecasts

	Units	LT price (real)	2009	2010e	2011e	2012e	2013e	2014e	2015e
Iron ore fines @ 63.5%	US\$/t fob	75.0	68.0	113.6	153.3	151.2	151.2	120.9	102.4

Source: UBS estimates

Table 6: Global iron ore exposed equities

Company	Price	Price Target	Upside	Rating	Market Cap (US\$m)	2010E EV/EBITDA	2011 EV/EBITDA
BHP Billiton Plc	2450	2385	-3%	Buy	220,651	7.3	5.5
Rio Tinto Plc	4346	4870	12%	Buy	137,928	6.0	4.1
Fortescue Metals Group Ltd	6.82	7.5	10%	Buy	21,559	9.8	5.7
Exxaro Resources	13899	17000	22%	Buy	7,340	6.5	4.3
Ferrexpo Plc	360.9	430	19%	Buy	3,416	5.8	4.5
Assore	17200	20800	21%	Buy	3,040	4.3	2.6
Mount Gibson Iron Limited	2.34	2.25	-4%	Buy	2,567	3.9	2.2
Gindalbie Metals Ltd	1.12	1.7	52%	Buy	1,058	-69.0	-51.5
Murchison Metals Limited	1.375	4	191%	Buy	608	-25.1	-28.8
Vale ADR (ON)	33.82	35.25	4%	Neutral	176,294	7.3	6.1
Anglo American	3029	3030	0%	Neutral	59,031	8.0	5.7
ENRC	991.5	1080	9%	Neutral	20,667	5.9	4.8
Kumba Iron Ore	41692	40000	-4%	Neutral	19,797	5.0	3.5
Vedanta Resources	2319	2400	3%	Neutral	10,206	5.8	3.3
MMX Mineração e Metalicos	13.6	15.25	12%	Neutral	3,832	44.0	42.2

Source: UBS estimates

The below table shows the NPV valuation under a scenario where we see stronger for longer iron ore prices and increased capitals costs. For iron ore capital expenditure we assume an annual 25% increase in growth capex costs and a 15% increase in maintenance capex.

Table 7: NPV on increased capital costs scenario

Company	Scenario NPV	Increase on Base NPV	Scenario P/NPV
BHP Plc	32.37	11%	0.81
Rio Tinto Plc	75.43	19%	0.64
Ferrexpo	6.53	27%	0.66
Fortescue Metals Group Ltd	7.39	33%	0.92
Mount Gibson Iron Limited	2.32	14%	1.01
Gindalbie Metals Ltd	2.32	35%	0.48
Vale	47.94	27%	0.71
MMX Mineração e Metalicos	15.25	68%	0.89
ENRC	16.23	10%	0.66
Anglo American	35.11	8%	0.92
Vedanta	32.23	5%	0.74

Source: UBS estimates

Table 8: Exposure and sensitivity to iron ore

Company	Iron ore exposure*	Iron ore price sensitivity**
BHP	35%	6%
Rio Tinto	60%	9%
Ferrexpo	100%	19%
Fortescue Metals Group Ltd	100%	16%
Mount Gibson Iron Limited	100%	17%
Gindalbie Metals Ltd	100%	NA
Vale	80%	10%
MMX Mineração e Metalicos	100%	37%
ENRC	48%	7%
Anglo American	28%	3%
Vedanta	17%	4%

Source: UBS estimates, *% of 2011 EBITDA from iron ore, **Change in 2011 EPS for a 10% change in iron ore price

■ Statement of Risk

We point out to investors the potential risks inherent in commodities markets, including but not limited to, their volatile nature, which may differ materially from expectations. Furthermore, this asset class is exposed to political, financial, operational and liquidity risks, each of which has the potential to significantly impact returns.