

Commodities – Mining & Metals

Brazil's loss, Australia's gain

Brazil: iron ore heavyweight

The China-led rise in seaborne iron ore prices over the past decade has prompted major supply expansions for the trade. At 370Mtpa, the world's second largest iron ore producer, Brazil (20% of global total; includes top-producer Vale, 310Mtpa, 14% of global total; 25% of seaborne) – is in the box seat to capitalise on this structural shift. Its mineral endowment features some of the world's largest, highest grade iron ore resources.

But supply growth is troubled

However, Brazil's considerable supply growth potential is being undermined by infrastructure bottlenecks & persistent regulatory risk. Complicated permitting processes, featuring evolving environmental obligations, have delayed key projects such as Vale's Carajás ramp-up, Trafigura/MMX's Sudeste Superport & Anglo American's Minas-Rio. Timing of Vale's flagship Serra Sul S11D project (90Mtpa; delayed 3 years now) is the single largest determinant of our long-term seaborne ore surplus & prices.

Brazil's constrained supply growth tightens seaborne trade

Brazil's ore exports are forecast to lift from 333Mt in 2013 to 486Mt in 2017 (+153Mt). This, together with Australia's forecast expanding trade, underpins expanding surpluses beyond 2014, weighing on our price forecasts. Indeed, we regard Brazil's underperforming supply growth outlook and China's steel demand growth outlook as equally important. In this report, we compare our current forecasts (please see our report 'Policy constrained', 15-Oct-13) with those of a scenario featuring an even slower Brazil supply growth rate, delivering a range of higher near-term ore price forecasts.

Equities that matter

Australia-based ore producers would be beneficiaries of any constraint to Brazil's supply growth outlook. Of these, we prefer Rio Tinto, BHP Billiton and Fortescue (all Buy), versus Vale (Neutral). Again, the Brazilian major's outlook is troubled by persistent production growth pressure and government intervention.

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Executive summary

Brazil is the world's second largest iron ore producer, with output and exports of 370Mt and 330Mt respectively (2013e).

Brazil's iron ore mining industry is dominated by Vale, delivering about 310Mtpa of ore (84% of country's total supply). Other, smaller producers include vertically-integrated steel companies, CSN and Usiminas.

With iron ore spot prices well above US\$100/t cfr (62% Fe) in recent years, a strong incentive exists for all seaborne-linked ore miners to expand production and exports. Our published iron ore price forecast (please see our report *Policy constrained*, 15-Oct-13), has Brazil's production lifting to 543Mtpa; exports of 486Mtpa – by 2017.

However, interpretation of data acquired on a recent tour of Brazil's industry (21-25 Oct 2013), indicated that our current supply growth estimate carry downside risk. This primarily reflects insufficient infrastructure development, environmental licensing delays, licence constraints & complex government procedures.

Despite on-going talk of improving the mining permit process, license lead times are actually increasing, according to industry operators. We recognise a risk that Vale may revise down production guidance, possibly as early as Vale Day in December (*Vale; Another Year of Production Pressure?* 22-Nov-13, Bokkenheuser).

Brazil losing market share to Australia

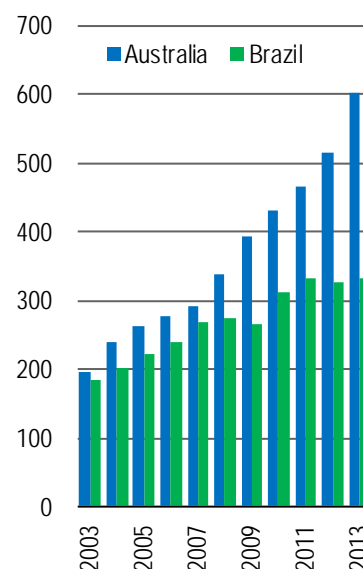
In the last decade, Brazil has lost market share within the seaborne iron ore trade.

- In 2003, Brazil exported 184Mt accounting for 34% of seaborne trade, roughly equivalent to Australia's 196Mt
- In 2013, we forecast Brazil's exports to grow to 333Mt, equivalent to a market share decline to 27%. Brazilian iron ore exports have grown at a CAGR of 6%, half of Australia's growth rate of 12%
- The pace of Brazilian export growth has also slowed during the past five years to a CAGR of just 4% & flattish at 330Mtpa over the past two years.

Why has growth been so much slower?

- **Environmental approvals:** Brazil's supply growth is under pressure from increased environmental focus on deforestation including a protracted and complicated permitting process (see page 6 for full discussion).
- **Infrastructure capacity & land access:** a shortage of port/railway capacity, as well as securing land access for infrastructure – has proved costly, time consuming. For example, Anglo American's Minas-Rio project is Greenfield and exports via a proposed 500km slurry pipeline that transits many land owners, & so is subjected to significant delays (see page 7).
- **But not capex related:** Vale spent more capex than any other iron ore producer during 2006-13, totalling US\$46bn, above Rio Tinto's US\$29bn, BHP Billiton's US\$27bn, Fortescue's US\$20bn. And yet, Vale's output has lifted only 35Mtpa vs. Rio Tinto (96Mtpa), BHP Billiton (91Mtpa) & Fortescue (99Mtpa).

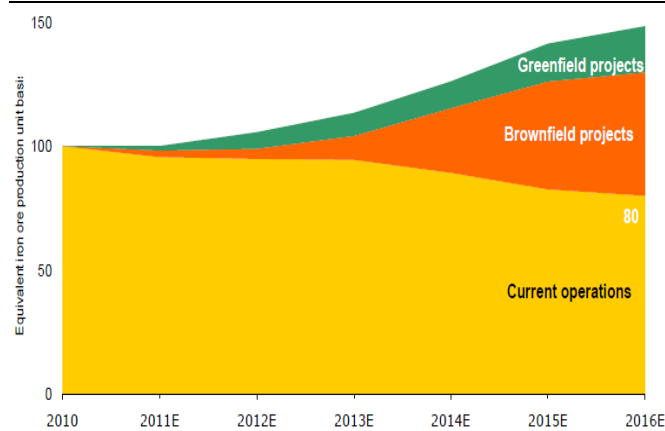
Chart 1: Iron ore exports (Mtpa)



Source: Company filings, UBS Research

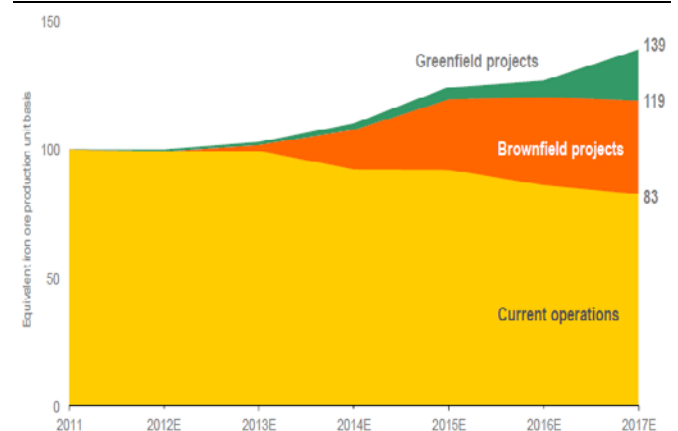
Presentations at Vale Day in 2011 and 2012, illustrate delays to Vale's growth (mostly environmental permitting issues). We have concerns that management may cut the outlook further soon, perhaps on Vale Day 2013.

Figure 1: Vale Day guidance, 2011



Source: Vale

Figure 2: Vale Day guidance, 2012



Source: Vale

Is there potential for change?

- **Corporates are negative:** industry feedback from Brazil's corporates suggests that the environmental approval process remains an impediment to project delivery. Approval lead times appear to be increasing.
- **Tax pressures building:** Vale & Brazil's government are negotiating a settlement on corporate taxes and penalties. Any settlement is likely to reduce Vale's financial ability to invest in further growth; a royalty hike (from 2% of net revenues to a possible 4% of gross revenue) would have a similar outcome.

Election probably not a catalyst for change: Brazil's national elections are scheduled for October 2014. Brazil's president, Dilma Rousseff, is currently favoured by polls for re-election with a 59% approval rating in November. Her closest rival is Marina Silva, an environmentalist for whom the market believes is even less likely to encourage expansion of the national mining industry.

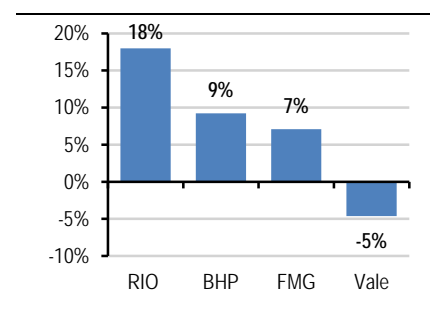
Equity positioning

We expect to see Australia's iron ore producing majors to continue to secure greater market share at the expense of Brazil's producers. We have Buy ratings on BHP Billiton, Rio Tinto and Fortescue versus Vale (Neutral).

- We review a scenario in which Brazil's growth is slower than our published forecast (please see our report *Policy constrained*, 15-Oct-13), tightening the iron ore market and slowing the pace of our forecast trend decline in prices. This scenario lifts our iron ore price deck US\$5/t over CY14-17E. (See p12)

Under the scenario, NPAT growth for CY14E & 15E would be highest for Rio Tinto, a 2 year CAGR of 18%, followed by BHP Billiton of 9%, Fortescue of 7% and Vale's earnings would decline 5%. (See p14.)

Figure 3: Big-4 2013-15E NPAT CAGR

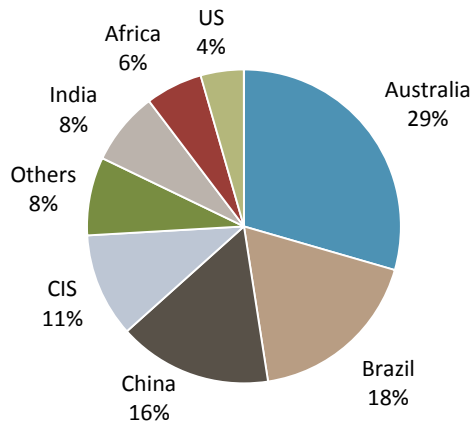


Source: UBS Research; based on scenario, p15

Brazil: iron ore industry overview

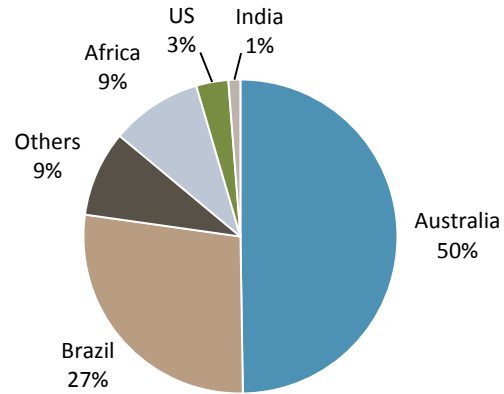
Brazil is the world's second largest iron ore producer/exporter: in 2012, it produced 366Mt; exported 327Mt (90%). The country accounts for around 18% of global production; 27% of seaborne supply.

Figure 4: Global iron ore production, 2013E



Source: Metalytics, Tex Report, UNCTAD

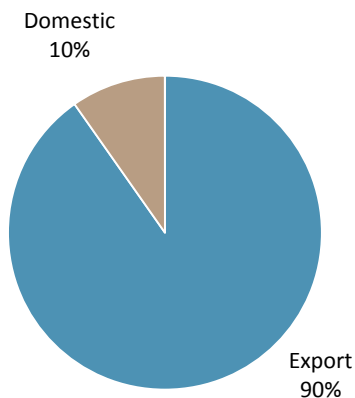
Figure 5: Global iron ore seaborne supply, 2013E



Source: Metalytics, Tex Report, UNCTAD

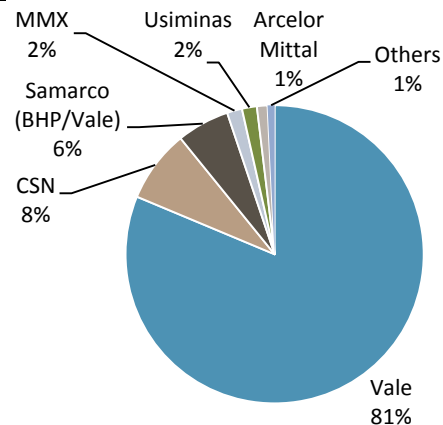
Brazil's iron ore production is dominated by Vale's 310Mtpa capability (UBSe 2013). Vertically-integrated steel companies (Arcelor Mittal, CSN, Usiminas), Anglo American, and a collection of small miners – make up the remainder (Figure 7).

Figure 6: Brazil's iron ore production versus exports



Source: Metalytics, Tex Report, UNCTAD

Figure 7: Brazil's iron ore production per producer

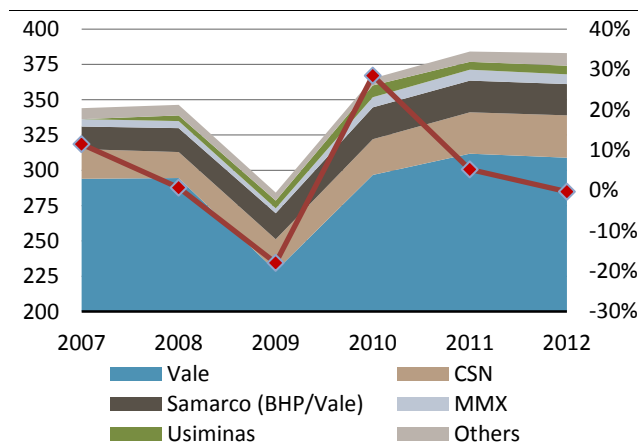


Source: Company data, Metalytics, Tex Report, UNCTAD

But Brazil's iron ore supply growth story remains under pressure, primarily on account of 1) infrastructure constraints, with insufficient port/railway capacity; and 2) growing environmental license lead times.

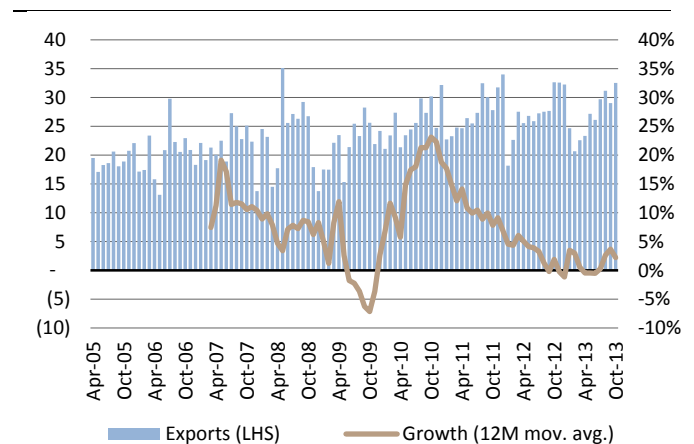
More specifically, export growth has declined from above 10% annually to close to zero, which is largely attributable Vale's negative production growth in recent years.

Figure 8: Brazil's iron ore production (Mt)



Source: Company data, Metalystics, Tex Report, UNCTAD

Figure 9: Brazil's iron ore exports (Mt/mth)



Source: Secex, MDIC

Environmental issues & constraints

Based on increased public scrutiny and attention, environmental awareness has lifted throughout Brazil in recent years and with it increased regulation. The timely receipt of environmental permits has proved a major headwind to volume growth in Brazil's iron ore industry.

Despite government efforts to reduce permit process times and overall bureaucracy, there is little obvious improvement on this matter. We expect that license lead times are likely to remain high over the short- to medium-term.

Issues that have contributed to delays include: **Brazil's license system** and a constant need for **pit-permitting**, resulting in a sense of bureaucracy. Combined with the **accountability of authorities' employees** and **court actions**, the average **timeframe** for approvals has increased materially. Each of these issues is explored below.

- (1) **Brazil's license system:** From project planning to production, Brazil's mining companies are required to obtain 3 primary licenses, all of which include environmental considerations, that is; 1) Preliminary License; 2) Installation License; and 3) Operating License.
 - a. **Preliminary License (LP - Licença Prévia):** the LP does not authorise asset installation, it includes an environmental impact study and analysis of whether the project adheres to underlying environmental laws. The LP is generally regarded as the most difficult approval to secure. Industry feedback indicates process time of 18 months.
 - b. **Installation License (LI - Licença de Instalação):** obtain an LI, miners need to submit a *Plan of Environmental Compensation* (PBA) as well as a *Plan for Recovery of Degraded Areas* (PRAD) and a *Forest Inventory*. The LI authorises the construction of infrastructure within 6 years. Process time of 12 months.
 - c. **Operating License (LO - Licença de Operação):** environmental studies may be required to obtain an LO - if not fully addressed during the LI license process - before daily operations can begin. The review will focus on other environmental issues + determine if LP & LI are being honoured. Process time of 12 months.

- (2) **Pit permitting:** we understand that to open up a new pit at a mining complex requires receipt of environmental licences. Until then, Brazil's miners continue mining deeper & extracting lower-grade ore.
- (3) **Number of permits required:** in 2012, Vale was awarded over 100 licences. For Anglo American's Minas-Rio project, over 300 licences have been required for the project.

Accountability of authorities' employees: significant risk exists with authorities reviewing/approving licenses, as the individual can be held directly responsible for approving operations in environmentally sensitive areas. To mitigate personal risk, approval process times are lifting.

- (4) **Court actions:** prosecutors have been suing miners in local courts, which have the power to halt projects and impose strict conditions. Anglo America's Minas-Rio project in Apr-12 had its license to install a power line suspended by a Minas Gerais state court. In Jul-11, a court Decision in Sao Luis in Maranhao state forced Vale to suspend construction work on the duplication of the Carajás railway system.
- (5) **Time frame:** Federal Government regulator, known as IBAMA, has a 2-year timeframe to approve projects. If IBAMA requires clarification of issues from the permitting process, the 2-year clock stops.

Impact on key projects

Vale's Serra Sul project (90Mtpa) has been delayed 3 years, because of environmental licenses conflicts. Preliminary approvals were received June 2011, but in July a Sao Luis court decision in the state of Maranhao forced Vale to suspend construction on the duplication of the Carajás railway system.

And while Vale's Carajás 40Mtpa processing capacity expansion now appears to be close-to-completion, the company is still held up by environmental obligations relating to the mines and infrastructure.

We now recognise a risk to Vale's 326Mt production target in 2014.

Anglo American has also reported construction delays in Minas-Rio, relating to land access, legal stoppages and environmental work permitting. Initially, Anglo expected first iron ore shipments from H213, but the target date of completion has so far been pushed back 12 months.

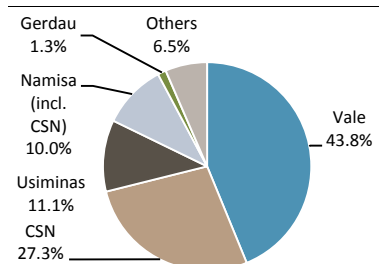
Infrastructure issues & constraints

Brazil's iron ore is primarily transported from mine-to-port, via a network of mainly privately owned railways. Miners predominately own this infrastructure.

For Vale, the company utilises three railway networks of which two are fully integrated to the Northern and South-eastern Systems. The third (Southern) system is reliant on the MRS railway. The latter is owned by Vale in conjunction with CSN, Usiminas, Gerdau and other smaller stakeholders (Figure 10).

Figure 13 is a map of the majority of Brazil's iron ore railway and port systems and figure 11 and 12 summarise their throughput and capacity.

Figure 10: MRS ownership



Source: Company data

Figure 11: Brazil iron ore logistics corridors

Logistics Corridor	Mines	Ports	Shipments		Current Capacity	Future capacity
			2011	2012		
MRS export	Vale Southern Systems, CSN, Usiminas, MMX	Vale: Guaiba Island & Itaguai ports in Rio CSN - Itaguai Port	93	93	100	180
MRS Domestic	Vale Southern Systems, CSN, Usiminas, MMX	N/A	18	18	20	20
EFC Carajás Railway	Vale Northern System	Ponta da Madeira	110	107	128	230
EFVM Railway	Vale South eastern System	Tubarao Port	120	116	120	120
Samarco pipeline	Samarco	Espirito, Santo	22	22	22	42
Barges - Paraguay and Parana rivers	Vale Midwestern System	San Nicolas Port - Argentina	6	6	6	6
Minas Rio pipeline	Minas-Rio	Acu	0	0	0	26
Amapa railway	Amapa	Santana Port	5	6	6	6
Total			372	368	402	629

Source: Company filings, UBS Research

Figure 12: Port and export terminals

Ports	Owners	Rail / Transport	Shipments		Current Capacity	Future capacity
			2011	2012		
Itaguai	CSN	MRS	28	25	30	84
Itaguai	Vale	MRS	22	23	25	25
Guaiba Island	Vale	MRS	38	40	40	40
Ponta da Madeira	Vale	EFC Carajás Railway	101	105	150	230
Tubarao Port	Vale	EFVM Railway	103	103	125	140
Espirito, Santo	Vale / BHP	Slurry pipeline	22	22	23	33
San Nicolas Port - Argentina	Vale	Barges	2	2	2	2
Sudeste Superport	Trafigura / MMX	MRS	0	0	0	50
Acu (Minas-Rio)	Anglo American	Slurry pipeline	0	0	0	26
Santana Port	Anglo American	Amapa railway	5	6	6	6
Total			318	325	401	636

Source: Company filings, UBS Research

Long-term underinvestment in infrastructure - coupled with an increase in population growth and capacity usage - are the cause of widespread, persistent transportation bottlenecks and project delays.

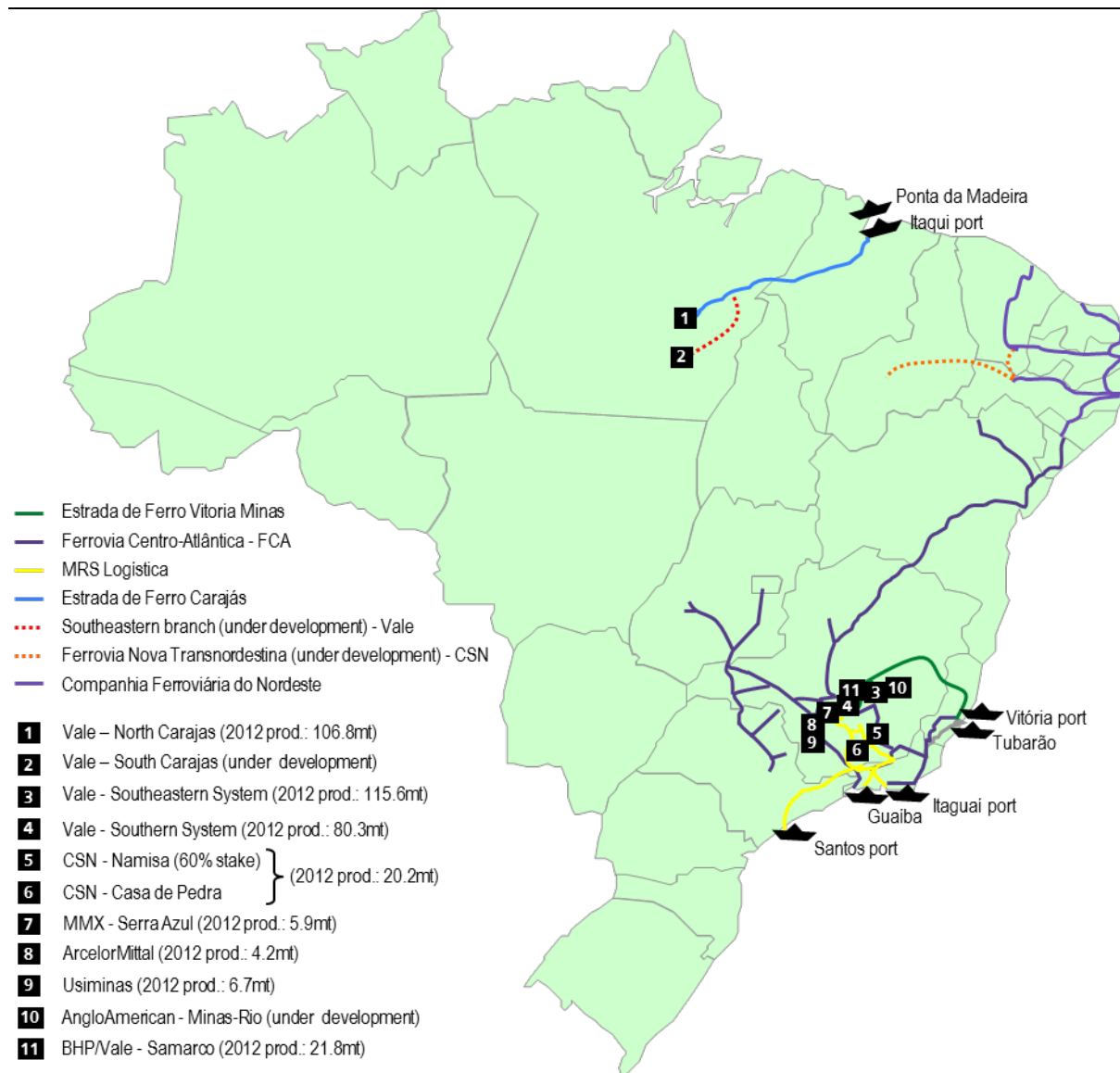
Outwardly, it is encouraging that various infrastructure expansions are underway and making progress. Several high-profile projects include Vale's expansion of the Northern system railways from the major Carajás iron ore assets to the port, as well as the expansion of Trafigura and Mubadala's Sudeste Superport in conjunction with MMX.

However, Brazil is materially short of infrastructure; projects are well behind schedule – with considerable risk of further delays. Again, frustrated land

acquisitions, environmental license constraints, local and national politics, administrative processes – all undermine rate of project deployment.

Our Oct-13 industry tour identified industry consensus that the rate of infrastructure development is slowing. Mining companies developing assets further inland are reporting the longest delays.

Figure 13: Brazil iron ore railway network



Source: Company data, UBS

Taxes & Royalties

Reporting substantially higher commodity prices and earnings over the past decade, Brazil's miners have managed to attract the attention of the national government. The new mining bill, which has been developed over four years, proposes raising royalties and auctioning off mining concessions – while tightening state control of the country's natural resources.

Royalties on the rise

Within the new mining bill is a proposal to increase royalties to ensure higher government revenues in view of Brazil's fiscal deficit.

- The existing royalty regime for iron ore miners is 2% of net revenues, which largely allowed deductions for logistics costs (transportation & loading).
- Under the new mining bill, royalties will lift to 4% of gross-revenue (i.e. no deductions), although there's been industry talk of royalties as high as 6-7%.
- We believe the royalty is to be paid on an FOB-basis, while the freight component of iron ore sold on a CFR-basis can be deducted. For Vale, about 40% of ore is sold CFR (mostly China), and expected to grow further.

Prima facie, the 4% royalty is below peers (Australia's royalty on ore fines was lifted 5.6%-to-7.5% of gross revenue, 2011-13).

However, following years of minimum wage increases, high inflation and rising amount of indirect taxes, we believe Brazil's mining industry is among the least cost competitive among its BRIC peers.

Industry tax litigation

A number of mining companies, including Vale, are currently subject to significant tax liabilities. This follows a Supreme Court ruling that Brazil's companies must pay taxes on foreign profits derived in tax havens, while tax liabilities from other foreign profits would be judged on a case-by-case basis.

For Vale, the company has been levied US\$16bn of tax liabilities for 2001-08, of which no provisions have been made.

While the case is currently being deliberated by the Supreme Court, Brazil's government has offered Vale various payment solutions: the option to pay the original US\$6bn for 2001-08, without interest and penalties in the near-term. Alternatively, it can pay a larger amount: an upfront payment this year (possibly 20-30%), amortising the residual amount over 10-15 years.

While a Supreme Court decision on Vale's outstanding tax liabilities was recently delayed – the government has granted Vale until the end of November to respond to its proposal.

Depletion

The *Iron Quadrangle* near Belo Horizonte accounts for around 250Mtpa of Brazil's 370Mtpa of production. This mining district is older and more mature than the Northern Systems which drives most of Vale's future growth projects of Carajás 40 and Serra Sul S11D.

The mines in these southern and south eastern systems are becoming deeper, facing declining grades – a condition generally described as depletion. Production volumes tend to decline over time without further investment in processing capacity.

- impact of depletion is evident in Vale's guidance; it illustrates how the base business of 310Mtpa would decline by around 20% over 5 years without investment (Figure 14).
- also evident is the grade profile of Vale's product, forecast to decline until Serra Sul's 66-67% product comes to market (Figure 15).

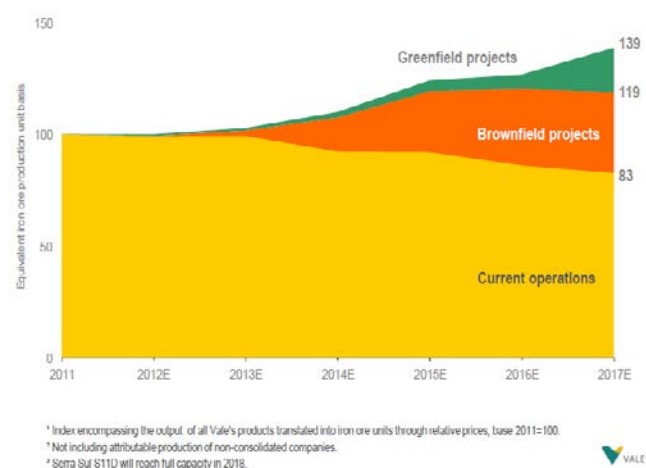
To offset this decline, Vale's investments across much of its Southern System are not aimed at replacing depleted assets – rather at upgrading the residual resource base. This includes upgrading lower grade and harder Itabirite reserves, which would have not been included in the original resource base. Obviously, the policy promises to lift longer-term beneficiation costs.

We expect this process to continue over the next 7 years. It will cover the bulk of assets in the South and South-eastern Systems.

- looking at Vale's project pipeline, several expansions fall into this category (basically the projects with Itabiritos in their name), including Conceição Itabiritos 1&2 (US\$2.4bn), Vargem Grande Itabiritos (US\$1.9bn) and Cauê Itabiritos (US\$1.5bn)
- these projects therefore do not simply represent growth in capacity, but rather an optimisation of current assets. These may or may not involve a net increase in capacity but generally do not.

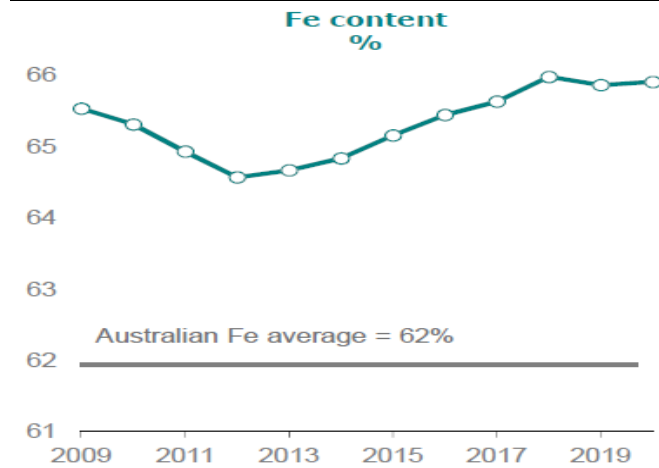
This is very much an issue for the Southern systems and relates only to the older mines as opposed to new capacity brought on stream over the last 10 years.

Figure 14: Vale day product guidance 2012



Source: Vale.

Figure 15: Vale's product grade over time



Source: Vale.

Risks to our surplus

We have a trend decline factored into our iron ore price forecasts, Figure 16. This reflects an on-going expansion & diversification of global ore supply versus China's moderating demand growth (please see our report *Policy Constrained*, 15-Oct-13). Our expected increase in supply causes our iron ore model move into a 130Mpta surplus in 2014E, growing to 220Mpta by 2017E.

- 130Mpta surplus for 2014E weighs on our price outlook; we forecast US\$114/t cfr for 2014E vs. current spot of US\$135/t; &
- our surplus lifts to 220Mpta by 2017E; prices forecast to fall to US\$90/t cfr.

However, we believe infrastructure constraints, environmental approval delays and other bottlenecks could continue to impede the growth of the Brazil's iron ore industry. So our Brazil supply growth forecast carries downside risk.

What's in our model? We forecast Brazil supply growth to total 30Mpta for 2014E and 153Mpta for 2013-17E. A slower and lower ramp-up from Brazil has the potential to significantly tighten the iron ore market. Our more complete summary of our iron ore model is shown p24.

Table 1: Supply growth forecasts

Supply growth relative to 2013	2013E	to 2014E	to 2017E
Australia	603	103	262
Brazil	333	30	153
India	15	15	15
RoW	261	13	40
Total	1,212	161	470
Brazil growth as a proportion of total growth		19%	33%
Surplus		130	219
Brazil growth as a proportion of total surplus		23%	70%

Source: UBS Research

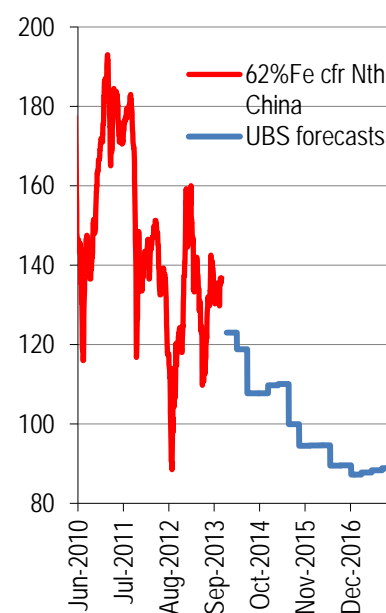
Can delays to Brazil's production growth deliver a tighter market?

- a very bearish scenario would assume zero-growth from Brazil; this delivers surpluses of 115mpta for 2014E; 66mpta 2015E.
- Australia's supply increase is still a dominant source of 2014's surplus; Brazil's growth could be a significant 'balancing item' longer term (i.e. Vale's Serra Sul S11D).
- balancing this outlook would require something other than supply cuts in Brazil; perhaps a further lift in China's demand growth rate.

A scenario to consider...

- **Volume scenario:** we run a scenario in which Brazil's iron ore supply growth rate is slower than our base (as detailed in our report *Policy constrained*, 15-Oct-13) case, driven by permitting and approval issues.
- As shown in Figure 17, all else remaining equal, our surplus for 2014 would reduce to around 90Mpta with lower surpluses in 2015-17 as well.

Figure 16: UBS iron ore price forecast



Source: UBS Research, Platts

- **Price scenario, US\$5/t higher:** With a tighter market under this scenario, the projected decline in our forecast iron ore price may be more modest. But a trend decline is still factored as the market would remain in surplus, as new lower cost supply would continue to undercut current marginal production.

Figure 17: Brazil supply growth scenario analysis

		2013E	2014E	2015E	2016E	2017E
Base case UBS model						
Vale sales volume	Mt	306	337	369	386	404
Other Brazil sales volume	Mt	62	83	105	134	139
Total Brazil sales volume	Mt	368	419	475	520	543
Total Brazil exports	Mt	333	363	418	463	486
Seaborne supply	Mt	1212	1374	1516	1628	1682
Surplus	Mt	5	130	187	243	219
Brazil Scenario						
Vale sales volume	Mt	306	305	334	348	370
Other Brazil sales volume	Mt	62	75	81	82	100
Total Brazil sales volume	Mt	368	380	415	430	470
Total Brazil exports	Mt	333	324	358	373	412
<i>Difference from base case</i>	%	0%	-11%	-14%	-19%	-15%
<i>Difference from base case</i>	Mt	0	-39	-60	-90	-73
Seaborne supply	Mt	1212	1334	1456	1538	1609
Surplus	Mt	5	91	128	153	145

Source: UBS Research

Figure 18: Iron ore price under scenario

		2013E	2014E	2015E	2016E	2017E
UBS base case price forecast	US\$/t 62% cfr fines	131	114	104	92	88
Scenario iron ore price	US\$/t 62% cfr fines	131	119	109	97	93
Difference from base case	%	0%	4%	5%	5%	6%
Difference from base case	Mt	0	5	5	5	5

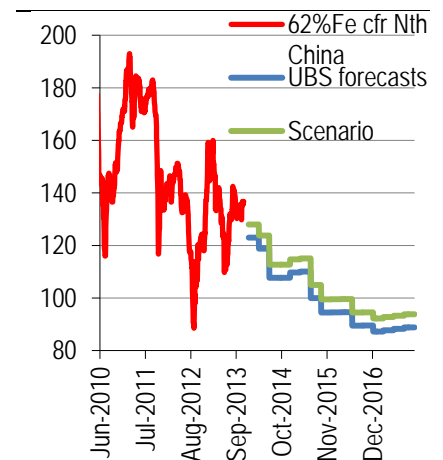
Source: UBS Research

How would our iron ore earnings appear under our scenario?

In Figure 19 & 20, we run our iron ore price scenario assuming US\$5/t cfr price uplift in a number of our iron ore equity models (all calendarised numbers):

- BHP Billiton is the least-influenced of Australia's top-3, reflecting its low cost base; high margins; diversified asset suite. It would trade at 10-11x P/E.
- Rio Tinto's earnings would be upgraded 6-7% for CY14-15 under the scenario and would trade at 7-8x P/E (Plc)
- Fortescue sees the largest upgrade of the Big-4 of 12-17% for CY14-15E, reflecting higher leverage from costs and product specifications.
- Vale's earnings are upgraded 10% in CY14 and 4% in CY15E. Increase in iron ore price on its base business, more than offsets the volume loss under the scenario. However, earnings growth from CY13-15E under the scenario would be negative, while the Australia's 3 largest miners are all positive.
- Under the scenario, NPAT growth for CY14E & 15E would be highest for Rio Tinto; a 2 year CAGR of 18%, followed by BHP Billiton of 9%, Fortescue of 7% and Vale's earnings would decline 5%.

Figure 19: Iron ore price forecasts vs s scenario (US\$/t cfr 62%)



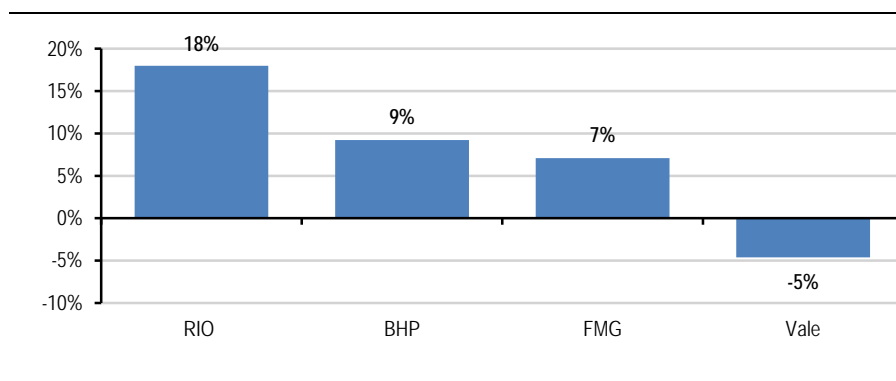
Source: UBS Research & Platts

Figure 20: Sensitivity of earnings to iron ore price scenario

	UBSe NPAT (reporting currency)		Scenario NPAT (reporting currency)		UBSe EBITDA (reporting currency)		Scenario EBITDA (reporting currency)		Scenario NPAT Change (%)		NPAT yoy Growth		P/E		EV/EBITDA	
	CY14	CY15	CY14	CY15	CY14	CY15	CY14	CY15	CY14	CY15	CY14	CY15	CY14	CY15	CY14	CY15
Majors																
Anglo American	2,375	3,235	2,446	3,343	9,015	11,089	9,206	11,342	3%	3%	2%	37%	11.8	8.7	4.2	3.4
BHP Billiton Ltd	14,000	14,843	14,477	15,467	31,060	33,085	31,865	34,098	3%	4%	12%	7%	12.9	12.1	7.0	6.6
BHP Billiton Plc	14,000	14,843	14,477	15,467	31,060	33,085	31,865	34,098	3%	4%	12%	7%	11.5	10.7	6.3	5.9
Fortescue Metals	3,048	2,532	3,428	2,952	6,729	6,156	6,187	5,566	12%	17%	33%	-14%	4.9	5.7	4.1	4.5
Rio Tinto Ltd	10,908	12,336	11,538	13,150	21,789	24,240	22,923	25,537	6%	7%	22%	14%	9.7	8.5	6.0	5.4
Rio Tinto Plc	10,908	12,336	11,538	13,150	21,789	24,240	22,923	25,537	6%	7%	22%	14%	8.4	7.4	5.4	4.8
Vale	11,018	10,288	12,071	10,727	19,909	19,441	21,543	20,481	10%	4%	2%	-11%	6.7	7.6	5.4	5.5
Median													9.7	8.5	5.4	5.4
Iron ore pure plays																
Arrium	369	272	415	317	923	806	984	868	12%	17%	74%	-24%	5.3	6.9	4.7	5.3
Atlas Iron Ore	121	108	154	147	351	301	398	356	27%	36%	144%	-4%	7.0	7.3	2.3	2.5
BC Iron	90	60	101	73	162	118	178	137	12%	22%	-23%	-27%	5.9	8.2	3.8	5.0
Cliffs	483	491	512	583	1,465	1,432	1,509	1,575	6%	19%	5%	14%	7.7	6.7	5.3	5.4
CSN	768	707	893	825	3,744	3,703	3,901	3,849	16%	17%	-9%	-8%	9.0	9.8	4.6	4.7
Ferrexpo	244	267	286	314	463	495	515	555	17%	18%	8%	10%	5.9	5.3	4.5	4.3
Mount Gibson	88	42	112	66	209	139	244	173	28%	60%	-13%	-41%	10.6	17.9	3.8	5.3
Usiminas	316	616	265	592	1,808	2,576	1,755	2,580	-16%	-4%	NM	123%	21.5	9.6	4.1	2.9
Median													7.3	7.7	4.3	4.8

Source: UBS Research

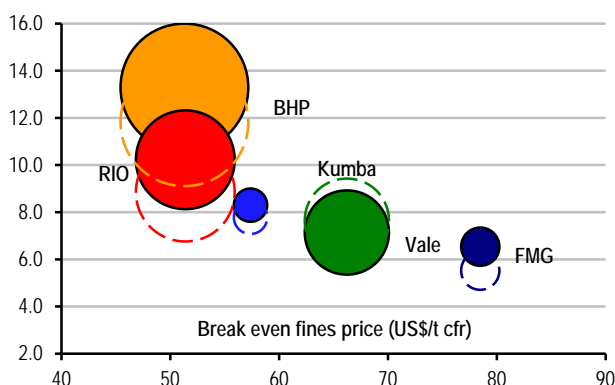
Figure 21: Big-4 2013-15E NPAT CAGR under price scenario



Equity preferences

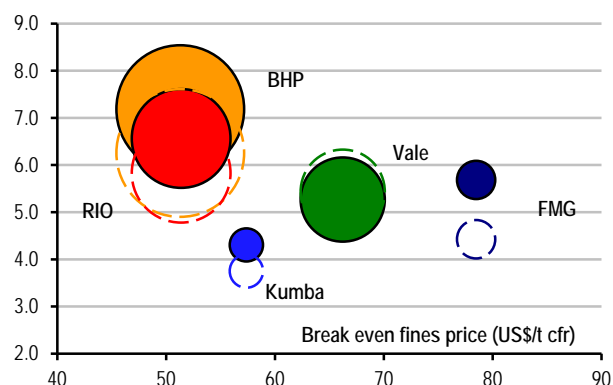
- We believe Australian iron ore majors will continue to gain market share at the expense of Vale. We have Buy ratings on BHP Billiton, Rio Tinto and Fortescue which are preferred to Vale (Neutral).
- **BHP Billiton** trades at a premium valuation to both Vale and Rio Tinto; the market appears willing to pay a premium for a more diversified asset suite and earnings growth. Iron ore currently accounts for around half of BHP's EBIT, compared to 90%+ for Rio and Vale.
- **Rio Tinto** appears to offer good value with sector-low breakeven cost and earnings growth. Like Fortescue, CY13E earnings multiples should fall relative to peers in CY14E, reflecting superior than sector earnings growth. This is driven by the 50Mpta (+20%) production growth at the Pilbara operations – the largest, lowest risk lift in the industry.
- Of the majors, **Vale** features a largest multiple discount to both Rio Tinto and BHP Billiton following underperformance in recent years.
 - Vale's discount continues to be appropriate in our view, given the lack of demonstrated production growth over the past 3 years. Vale is now trading at a 3.0x P/E discount to the average of BHP and RIO Plc (vs 1.6x historically) or 4.6x to BHP and RIO Ltd (vs 2.8x historically; Figure 25-26). Volume growth from here is also comparatively longer-dated, weighted to CY17E with the major Carajás ramp-up, behind both RIO & BHP which should be delivering most growth in CY13-15E.
- **Fortescue** trades on much lower P/E multiples than the other majors, but more equivalent on an EV/EBITDA basis (a function of financial leverage).
 - The decline in P/E & EBITDA ratios from CY13E to CY14E reflect superior earnings growth vs. peers. FMG is nearing end of growth cycle in capex programme; now set to de-gear quickly. If ore prices remained around US\$140/t, we estimate it could be debt-free by end of CY15E.

Figure 22: Break-even costs vs CY13e & Cy14e P/E



Source: Company filings and UBSe. Solid bubbles represent CY13e P/E, dotted bubbles CY14e.

Figure 23: Break-even costs vs CY13e & Cy14e EV/EBITDA



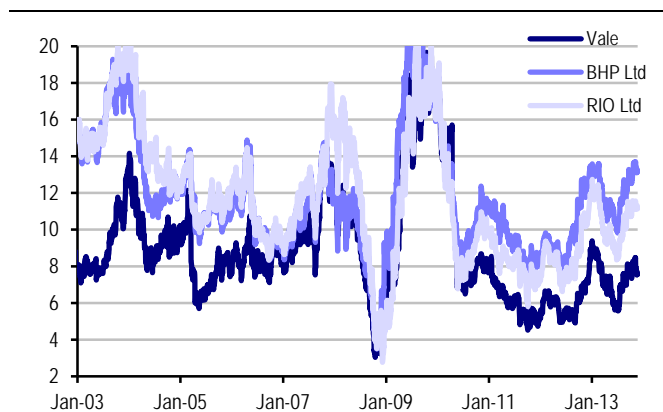
Source: Company filings and UBSe. Solid bubbles represent CY13e EV/EBITDA, dotted bubbles signal CY14e.

Figure 24: Iron ore valuation comparison

	Current	Price	Rating	Mkt Cap	EV	EV/EBITDA (x)			P/E (x)			FCF Yield (%)			Div Yield (%)			Book value
Company	Price	Target		USDm	USDm	2012A	2013E	2014E	2012A	2013E	2014E	2012A	2013E	2014E	2012A	2013E	2014E	P/B
DIVERSIFIEDS																		
Anglo American	£14.00	£15.00	Neutral	28,975	37,635	5.3x	4.5x	4.9x	9.9x	12.1x	12.2x	-1.9%	-2.4%	-2.9%	3.8%	3.8%	3.8%	0.7x
BHP Billiton Ltd	A\$37.55	A\$40.00	Buy	186,532	216,931	8.1x	7.2x	6.9x	14.5x	15.0x	13.3x	-2.2%	2.1%	5.6%	3.3%	3.4%	3.6%	2.8x
BHP Billiton Plc	£19.28	£20.20	Buy	165,833	196,232	7.3x	6.5x	6.3x	12.9x	13.3x	11.8x	-2.5%	2.4%	6.0%	3.7%	3.8%	4.1%	2.5x
Rio Tinto Ltd	A\$64.73	A\$80.00	Buy	111,636	131,373	8.5x	7.4x	6.5x	11.9x	11.8x	10.2x	-7.2%	0.1%	5.4%	2.8%	3.0%	3.1%	2.4x
Rio Tinto Plc	£32.59	£36.20	Buy	97,122	116,859	7.2x	6.6x	5.8x	10.4x	10.2x	8.9x	-8.3%	0.1%	6.2%	3.2%	3.4%	3.6%	2.1x
Vale	US\$15.69	US\$16.00	Neutral	81,272	107,363	9.6x	5.3x	5.4x	11.4x	7.1x	7.6x	-2.1%	-0.7%	0.7%	7.1%	4.2%	1.5%	1.7x
Mean						7.7x	6.2x	6.0x	11.8x	11.6x	10.7x	-4.0%	0.3%	3.5%	4.0%	3.6%	3.3%	2.0x
Market cap / EV weighted				389,249	474,136	7.9x	6.3x	6.1x	12.3x	11.7x	10.7x	-3.7%	0.7%	4.1%	4.1%	3.6%	3.2%	2.2x
Median						7.7x	6.5x	6.0x	11.7x	11.9x	11.0x	-2.3%	0.1%	5.5%	3.5%	3.6%	3.6%	2.2x
IRON ORE PURE PLAYS																		
Atlas Iron	A\$1.18	A\$1.00	Neutral	1,000	834	NM	3.2x	2.9x	NM	16.8x	8.8x	-17.3%	-4.7%	3.0%	2.8%	3.3%	1.7%	0.6x
BC Iron	A\$5.20	A\$4.50	Neutral	555	636	5.4x	3.3x	2.8x	7.7x	5.1x	7.1x	-22.7%	46.7%	17.8%	4.2%	12.3%	8.3%	2.6x
Cliffs Natural Resources	US\$27.57	US\$24.00	Neutral (CBE)	3,926	7,785	6.7x	5.2x	4.7x	7.9x	7.8x	8.7x	26.5%	-1.5%	6.9%	7.9%	3.4%	2.2%	0.8x
Fortescue Metals	A\$5.79	A\$6.50	Buy	16,828	27,555	8.3x	5.7x	4.4x	15.5x	6.5x	5.5x	-40.3%	1.9%	14.7%	0.7%	3.0%	3.3%	4.1x
Ferrexpo	£1.83	£2.25	Buy	1,682	2,105	6.2x	4.3x	5.0x	7.9x	6.5x	7.1x	-18.4%	-1.5%	3.6%	2.2%	2.2%	2.2%	1.1x
IRC	HK\$0.82	HK\$1.14	Buy	456	564	NM	15.9x	2.6x	NM	NM	6.3x	-31.3%	-21.0%	-27.3%	0.0%	0.0%	0.0%	0.5x
Gindalbie	A\$0.13	A\$0.13	Neutral (CBE)	174	100	NM	NM	NM	NM	NM	NM	-5.5%	-4.3%	-3.1%	0.0%	0.0%	0.0%	0.2x
Grange Res.	A\$0.25	A\$0.21	Neutral	271	113	3.3x	1.9x	2.4x	7.3x	13.0x	15.9x	23.4%	5.8%	20.4%	8.9%	8.0%	8.0%	0.3x
Kumba Iron Ore	40850Rcnt	45000Rcnt	Neutral	12,647	13,160	7.1x	4.3x	3.8x	8.6x	8.3x	7.8x	12.9%	15.9%	14.9%	9.4%	10.1%	10.9%	7.3x
MMX Mineração	R\$0.65	#N/A	Suspended	278	1,554	NM	40.0x	8.5x	NM	NM	16.7x	NM	NM	NM	0.0%	0.1%	1.6%	0.2x
Mount Gibson	A\$1.08	A\$0.82	Neutral	1,106	855	2.4x	2.3x	2.2x	11.8x	8.8x	13.5x	-7.1%	25.2%	10.9%	4.1%	3.7%	3.7%	1.0x
NMDC	R\$131.50	#N/A	Suspended	8,332	4,459	5.3x	4.0x	4.5x	6.6x	8.4x	8.8x	8.2%	6.4%	-0.4%	6.6%	3.7%	2.7%	1.6x
Mean						5.6x	8.2x	4.0x	9.2x	9.0x	9.6x	-6.5%	6.2%	5.6%	3.9%	4.2%	3.7%	1.7x
Market cap / EV weighted				47,254	59,720	7.0x	6.0x	4.3x	10.3x	7.6x	7.4x	-8.9%	6.7%	10.2%	4.9%	5.1%	5.1%	3.9x
Median						5.8x	4.3x	3.8x	7.9x	8.3x	8.7x	-7.1%	1.9%	6.9%	3.4%	3.4%	2.4%	0.9x
INTEGRATED STEEL																		
Arrium	A\$1.62	A\$1.40	Sell	2,044	4,284	6.9x	5.7x	NA	11.0x	8.2x	NA	-2.6%	26.0%	NA	3.4%	4.1%	4.3%	0.5x
Companhia Siderurgica	R\$12.57	R\$8.50	Sell	8,067	17,250	7.2x	10.1x	10.9x	NM	17.5x	24.1x	-16.9%	-14.5%	-7.4%	1.8%	0.6%	1.0%	1.9x
Usiminas	R\$12.78	R\$8.50	Sell	5,703	7,420	20.3x	10.3x	9.7x	NM	NM	41.3x	2.3%	-7.0%	-12.8%	0.8%	0.8%	0.8%	0.7x
Mean						11.5x	8.7x	10.3x	11.0x	12.9x	32.7x	-5.8%	1.5%	-10.1%	2.0%	1.8%	2.0%	1.0x
Market cap / EV weighted				15,815	28,953	10.5x	9.5x	9.0x	1.4x	10.0x	27.2x	-8.2%	-6.5%	-8.4%	1.7%	1.1%	1.3%	1.3x
Median						7.2x	10.1x	10.3x	11.0x	12.9x	32.7x	-2.6%	-7.0%	-10.1%	1.8%	0.8%	1.0%	0.7x

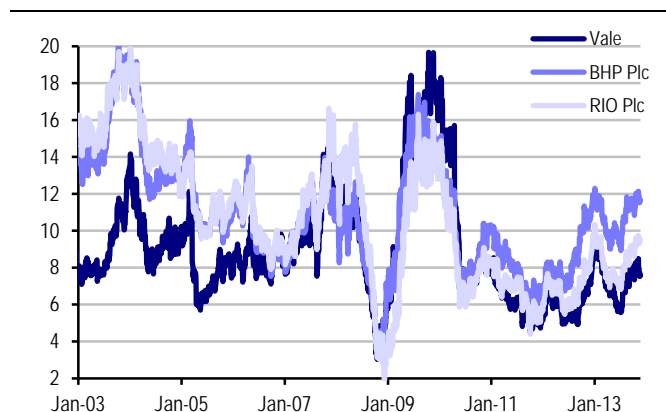
Source: UBS Research.

Figure 25: Vale P/E ratio comparison (vs UK listing)



Source: DataStream.

Figure 26: P/E ratio comparison (vs Australian listing)



Source: DataStream.

Brazil iron ore players

Vale (Neutral)

Current production & guidance

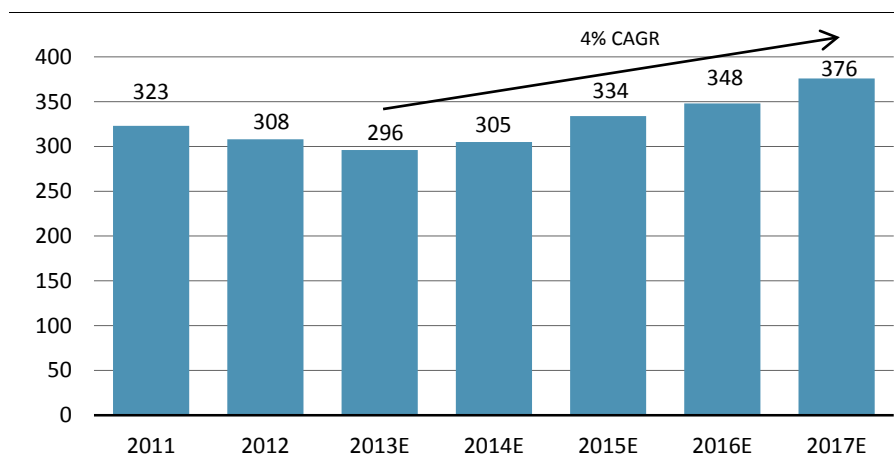
Vale shipped 303Mt of iron ore in 2012. This rate will probably be maintained in 2013, with some upside risk. As of 9M13, production was 227Mt, while management is guiding for 326Mt of in 2014.

We are concerned that 2014's target will not be achieved, because of on-going environmental constraints and license delays.

Expansion underway

In Oct 2010, Vale's management indicated an ore production target of 522Mpta by 2015, equivalent to a 190Mpta capacity expansion. To achieve this, 130Mpta would come from Carajás (+40Mpta) and Serra Sul (+90Mpta). The balance (60Mpta) was to come from Vale's Southern and South-eastern Systems, together with Guinean Simandou project (+15Mpta).

Figure 27: Vale bear case iron ore production (mt)



Source: Company data

However, development delays in both Brazil and Guinea has forced management to revise the 2015 targets down 30% to 364Mt, ex-Samarco production.

- **Northern (Carajás) System:** volume growth from Vale's Northern System Carajás assets is a 2-part ramp-up:
 - North Carajás: Vale current mines the Northern range of Carajás (namely assets N4W, N4E and N5) from which 107Mt and 73Mt of production materialised in 2012 and 9M13 respectively (see black box 1, Figure 13). An expansion is underway to lift mining activity (Carajás 40), once additional railway capacity is in place (CLN 150) and all licenses are secured.

Production growth is capped until operating license (LO) for Carajás 40 as well as various environmental approvals to ramp up mining activity. While the former approval is expected in the near-term, the latter is entailed with more uncertainty.

- South Carajás: In the medium term, management intends to increase production by an additional 90Mpta from the Southern range of Carajás (namely assets Serra Sul S11D and Serra Leste SL1). No production has emerged from this area to date, as an additional railway line is required to link the mines to the CLN 150 rail (see black box 2 in figure 13 above).

However, the project is 3 years behind schedule; now targeting commissioning in H216; 46% physical completion to date. Volume ramp-up requires additional railway capacity to expand CLN150 and link S11D to the rail with expected commissioning over 2015-18; 10% physical completion to date.

- **Southern & South-eastern Systems**: while the Northern system is expected to be the primary driver of volume growth in the coming years, Vale's oldest assets, the South-eastern & Southern Systems, have slowed resulting in declining production in recent years.

To offset the slowdown, management has embarked on a series of processing expansions to monetise the remaining lower grade reserves, hence the project names relating to Itabiritos.

- South-eastern System: construction on three process & concentration plants will continue over the next 12 months. This additional capacity should enable Vale to replace declining production volumes in the South-eastern system. Management expects ore grades to be above 65% Fe; beneficiation costs are expected to rise.
- Southern System: similar to the South-eastern system, management is constructing additional processing capacity over the next 12 months. This is to offset recent production declines; beneficiation costs here are expected to rise.

Our Vale equity model and valuation features a conservative production outlook, consistent with management's guidance.

Risks

In our view licensing and infrastructure expansion remain the primary risks to Vale's ability to ramp up iron ore production volumes, given the growing focus on the environment and local communities.

Samarco (Vale 50%, BHP 50%)

Current production

Samarco shipped 22.5Mpta in CY12 from 3 pellet plants.

Samarco is an iron ore pellet producer with one mine and two concentrators at the Germano complex in the State of Minas Gerais in Brazil, and three pellet plants and a port located at Ubu in Espírito Santo. The mining complex and port, which are owned by Samarco, are connected by two 396km iron ore slurry pipelines. The mine is open-cut with itabirite and friable hematite ores, which are beneficiated through a crushing/milling/flotation process and then processed into pellets at the port.

Samarco's ore reserves are 3.0Mt (at 39.7% Fe), implying a reserve life of ~40 years; there are also 2.0Mt of resources. 20% of Samarco's electricity comes from interests in two owned hydro-power plants, with the remainder on a supply contract, which expires in 2022.

Expansions being executed

In April 2011 BHP and Vale approved the US\$3.5bn Fourth Pellet Plant Project at Samarco. The expansion should increase iron ore pellet production capacity for Samarco by 8.3Mpta to 30.5Mpta. First pellet production is scheduled for 2014H1. The investment includes:

- at the Germano mine — increased mining capacity and a third concentrator;
- third slurry pipeline (around 400km in length); and
- at the Ponta Ubu site — a fourth pellet plant, enhanced ship loading capacity.

This investment equates to US\$422/t of capacity, more than twice the cost of the last expansion that was completed in 2008. It is important to note that some of the capital is building additional capacity upfront, over and above what is strictly required for the 4th pellet plant. We believe this includes a slurry pipeline with over twice the capacity for the 4th pellet plant which may be utilised for a potential expansion to a 5th pellet plant.

We also believe there are additional earthworks and conveyors which set up a potential 4th concentrator. So while the headline US\$422/t of capacity appears much higher than the last project, we believe part of this is pre spend towards the potential 5th pellet plant project, which would benefit from lower capex.

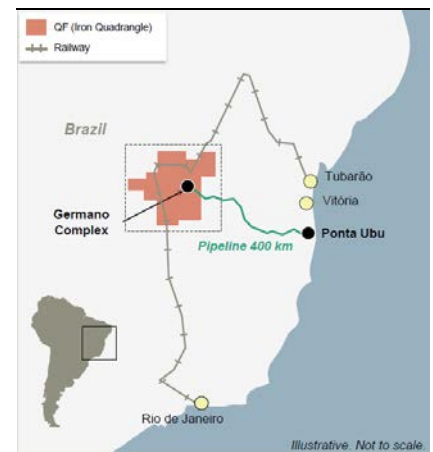
Further expansion potential

Current resource base for Samarco is 6.1Bt with reserves of 2.0Bt. With a 35 year life post the 4th pellet plant and some of the capex for the 4th pellet plant providing a platform for the 5th plant, it is likely that another 8.5Mpta if capacity is installed, with a 6th pellet line possible.

What does our iron ore model assume?

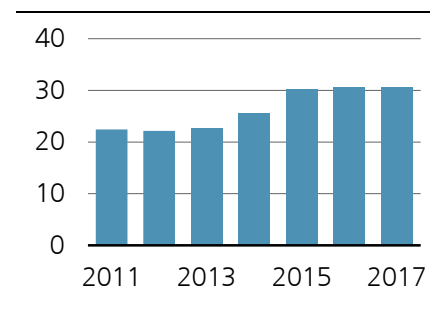
We do not include expansion beyond the 3rd Pellet Plant in our iron ore model.

Figure 28: Overview of Samarco assets



Source: BHP Billiton

Figure 29: Samarco production ramp-up (Mpta)



Source: UBS Research

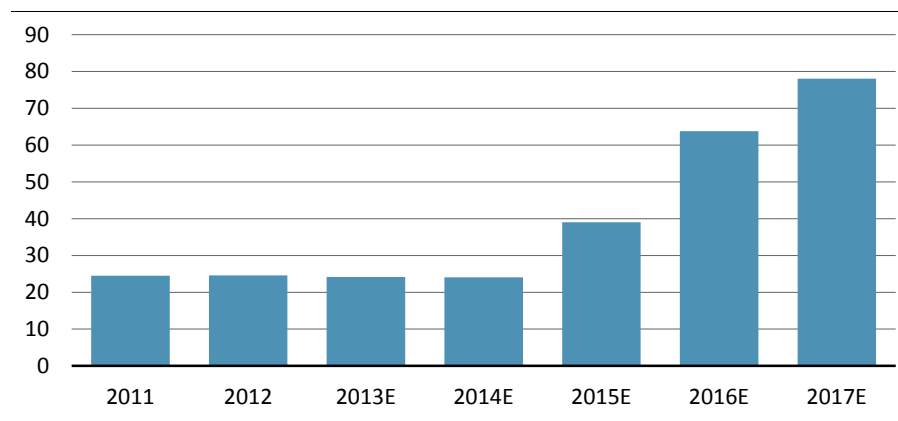
CSN (Sell)

Current production and guidance

Steel producer, CSN, shipped 25Mt of iron ore in 2012, which is likely to remain relatively unchanged this year, while management is guiding for higher volumes in 2014 post completion of the current port expansion. As such, CSN is Brazil's third largest iron ore producer accounting for c8% of the country's total seaborne supply.

However, CSN's exports include volumes from third-party miners from which the company purchases iron ore to fully utilise capacity on the MRS railway.

Figure 30: CSN iron ore sales (mt)



Source: Company data, UBS estimates

Expansion underway

CSN owns and operates iron ore mines, railways, ports and cement plants in the Eastern and Northern parts of Brazil.

Management is currently planning three primary expansions of its port, railway and mine capacity.

- **Mine expansion.** CSN primarily operates two mines, Casa de Pedra and Namisa (the latter held with Asian steel producers) with a current capacity of 21Mtpa and 6.8Mtpa respectively. However, in the coming years, management intends to increase capacity to 50Mtpa and 33Mtpa respectively currently guiding for first stage completions by next year.
- **Port expansion.** There are further plans to expand iron ore capacity at the Itaguaí port from 30Mtpa to 84Mtpa in the coming years.
- **Railway expansion.** In the Northern part of Brazil, management is planning to add 1,728km of track to its Transnordestina railway with an aim to transport mainly grains, fertilizers, fuel and iron ore, among others. The project is scheduled for completion in 2016.

Risks

While the projects are ambitious, we believe they are entailed with a significant amount of risk in view of CSN's highly levered balance sheet, current negative free cash flows and potential earnings pressure from lower iron ore prices in the coming years.

MMX

Current production and guidance

Iron ore producer, MMX, shipped 7Mt of iron ore in 2012 while management is guiding for higher volumes in 2014 post completion of the current expansion of the Sudeste Superport. As such, MMX is Brazil's fourth largest iron ore producer accounting for c2% of the country's total seaborne supply

Expansion underway

MMX owns and operates the Serra Azul and Corumbá iron ore mine as well as retains a 35% stake in the Sudeste Superport following a recent 65% stake-sale to global commodities trader, Trafigura, and Abu Dhabi investment fund, Mubadala.

Prior to sell-down, management planned to materially expand capacity of both the port and the underlying mines.

- **Mine expansion.** MMX received a construction license to expand the Serra Azul mine in April 2012, as management plans to increase iron ore production to 29Mtpa. The mine is located 10km from the MRS railway with which MMX has a long term transportation contract (36Mtpa). Once the Sudeste Superport is commissioned, the mine is supposed to utilise the port with the potential of significant output growth by 2017.
- **Port expansion.** Once construction is complete, the Sudeste Superport is licensed to 50mtpa with the potential of 100mtpa over time. However, the project remains behind schedule, initially targeted for first-stage completion in 2012, the recent guidance is H214.

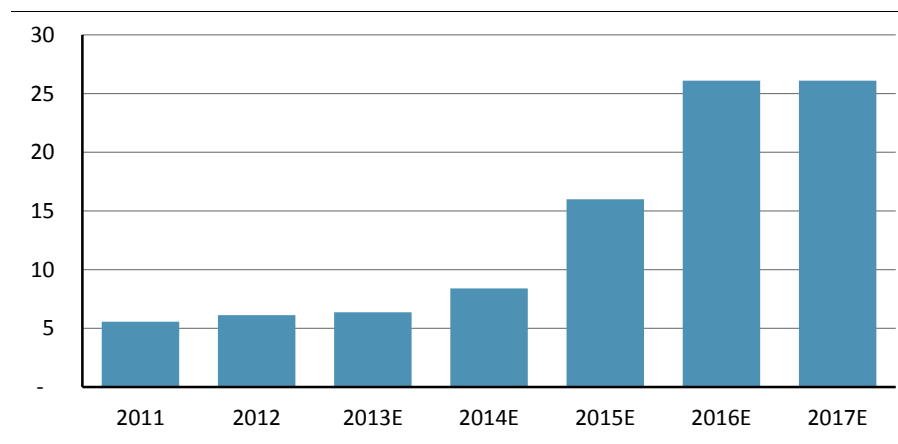
Usiminas (Sell)

Current production and guidance

Steel producer, Usiminas, produced just short of 7mt of iron ore in 2012, which is likely to remain relatively unchanged this year with a bit of risk to the downside. But management is guiding for higher volumes in the coming years post completion of a significant mine expansion.

The bulk of Usiminas' iron ore is utilised internally for steel production usage, while the company is Brazil's fifth largest iron ore producer accounting for less than 1% of the country's total seaborne supply.

Figure 31: Usiminas iron ore production (mt)



Source: Company data, UBS estimates

Expansion underway

Usiminas, in addition to producing steel, owns and operates its own iron ore mines alongside maintaining a stake in the MRS railway. Management's expansion plans include increasing mine capacity and utilising the Sudeste Superport through the company's take-or-pay contract (up to 12mtpy) with MMX.

- **Mine expansion.** Usiminas controls sizeable iron ore assets relative its size with reserves of 2.6bn tons, partially in a JV with Sumitomo. Management plans to increase mine capacity from 10mt in 2012 to potentially 29mt in the coming years, but seeing Usiminas is short of railway and port capacity, we believe the expansion would be entirely dependent on the completion of the Sudeste Superport.
- **Port expansion.** As mentioned in the previous company section, we believe Trafigura and Mubadala intend to execute on MMX's expansion plans of the Sudeste Superport. However, on account of ongoing delays to completion, we believe sales volumes won't ramp up materially until 2015.

Risks

While management has reiterated its intentions to execute on its mine expansion throughout this year, investor sentiment appears to be more sceptical on account of ongoing production misses and the recent ownership restructuring.

Minas-Rio (Anglo American)

Current production

The Amapá iron ore system is in the Amapá state in northern Brazil. Pellet feed and sinter feed production, reached 6.1Mt in 2012. The assets are in the process of being divested to Zamin Ferrous Ltd, which is expected to be completed in 2013.

Expansion being executed

Anglo is growing its Brazilian iron ore business through the Greenfield Minas-Rio project which is under construction. Stage 1 will add 26.5Mtpa of pellet production. On completion of Phase 1, ore will be transported through a slurry pipeline, over 500 km to the port of Açu in the state of Rio de Janeiro.

First ore was scheduled for H213, but has faced several delays and is now expected by the end of 2014. Delays have been driven by land access, legal stoppages and environmental work permitting.

The capital budget has also faced escalation. The latest capital budget is US\$8.8bn, but remains under review, with Anglo focusing on containing a budget increase within 15%. Capex was estimated at US\$5.0bn, which implies capital intensity of US\$190/t.

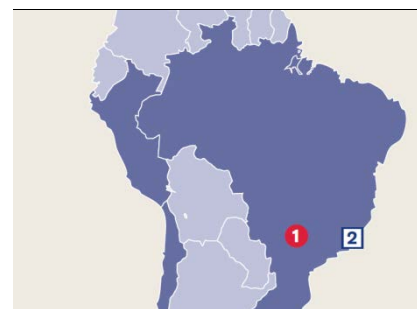
Further expansion potential

Pre-feasibility studies for the second phase of the Minas-Rio iron ore project commenced during 2011. We believe this may result in additional 26.5Mtpa of supply. Timing on this project may be ~4 years later than Stage-1, so 2018-19. The resource of 5.8bt supports potential expansion.

What does our iron ore model assume?

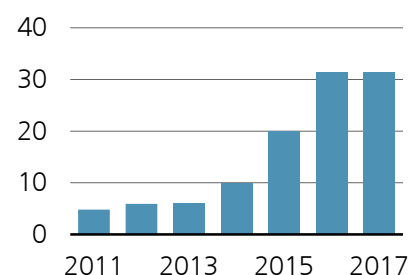
We assume Anglo American grow Minas-Rio to 26.5Mt by 2016.

Figure 32: Anglo American South American iron ore assets



Source: Anglo American.

Chart 2: Anglo American Brazil production ramp up (Mtpa)



Source: UBS Research.

Iron Ore Supply-Demand Outlook

Table 2: Global & Seaborne Iron Ore Markets

		2010	2011	2012	2013e	2014e	2015e	2016e	2017e
Global crude steel production	Mt	1,432	1,518	1,548	1,600	1,665	1,715	1,753	1,814
<i>YoY growth</i>	%	15.8%	6.1%	1.9%	3.3%	4.1%	3.0%	2.2%	3.5%
Global iron ore demand	Mt	1,728	1,821	1,928	1,983	2,045	2,090	2,108	2,157
Global iron ore supply	Mt	1,792	1,844	1,963	2,045	2,287	2,422	2,515	2,554
Global Balance	Mt	63.8	23.3	35.1	62.0	241.9	332.1	407.0	396.8
Total seaborne iron ore demand	Mt	1,012	1,078	1,130	1,207	1,244	1,329	1,386	1,463
<i>YoY growth</i>	%	11.2%	6.6%	4.8%	6.8%	3.0%	6.8%	4.3%	5.6%
China iron ore import requirements	Mt	619	687	745	821	847	890	924	988
China as % of seaborne market	%	61%	64%	66%	68%	68%	67%	67%	67%
Total seaborne iron ore supply	Mt	1,016	1,080	1,131	1,212	1,374	1,516	1,628	1,682
<i>YoY growth</i>	%	9.2%	6.4%	4.7%	7.2%	13.3%	10.4%	7.4%	3.3%
Seaborne Balance	Mt	4.1	2.0	1.1	5.3	130.0	187.3	242.9	218.8

Exports									
Australia	Mt	430	466	514	603	707	781	838	866
Brazil	Mt	311	331	327	333	363	418	463	486
India	Mt	97	79	38	15	30	30	30	30
Price CY fines fob	US\$/t (62%Fe)	113	164	122	123	106	95	83	80
Price CY fines fob	US\$/dmtu	183	265	196	198	171	154	135	129
Price CY lump fob	US\$/t	128	180	129	132	117	106	95	94
<i>lump/fine differential</i>	US\$/t	15.1	15.4	7.4	9.0	10.4	10.3	12.0	14.2
Price change fines CY-o-CY	%	70%	45%	-26%	1%	-13%	-10%	-12%	-4%
Price change lump CY-o-CY	%	52%	40%	-28%	2%	-11%	-10%	-10%	-2%

China's Iron Ore Market

Crude steel production		626	684	709	766	801	830	847	886
<i>YoY growth</i>	%	10%	9%	4%	8%	5%	4%	2%	5%
Pig iron production	Mt	586	628	654	700	721	739	743	769
Domestic iron ore production	Mt	1065	1315	1329	1202	1233	1179	1075	990
<i>Implied iron grade of domestic ore</i>	%	19%	15%	16%	16%	15%	16%	16%	16%
Net iron ore imports	Mt	619	687	745	821	847	890	924	988
<i>YoY growth</i>	%	-1%	11%	9%	10%	3%	5%	4%	7%
Estimated grade of imported ore	%	60%	60%	59%	59%	59%	59%	59%	59%
<i>import growth</i>	%	-1%	11%	9%	10%	3%	5%	4%	7%
Imported iron units % of total	%	65%	67%	67%	72%	72%	74%	77%	79%

Source of iron ore imports to China

Australia	%	43%	43%	47%	50%				
Brazil	%	21%	21%	22%	19%				
India	%	16%	11%	4%	1%				

Source: UBS Research

Statement of Risk

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Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	less than 1%	less than 1%

Source: UBS. Rating allocations are as of 30 September 2013.

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Arrium Limited ^{4, 5a}	ARI.AX	Sell	N/A	A\$1.63	22 Nov 2013
Atlas Iron Limited ^{5a, 13}	AGO.AX	Neutral	N/A	A\$1.19	22 Nov 2013
BC Iron Limited ¹³	BCI.AX	Neutral	N/A	A\$5.05	22 Nov 2013
BHP Billiton Limited ^{4, 6a, 8, 16}	BHP.AX	Buy	N/A	A\$37.83	22 Nov 2013
BHP Billiton Plc ^{2, 4, 5b, 6a, 16}	BLT.L	Buy	N/A	1,910p	21 Nov 2013
Cliffs Natural Resources, Inc. ^{6b, 7, 13, 16, 20a}	CLF.N	Neutral (CBE)	N/A	US\$26.43	21 Nov 2013
Companhia Siderurgica Nacional ^{5b, 16}	CSNA3.SA	Sell	N/A	R\$12.60	21 Nov 2013
Ferrexpo Plc ^{5b}	FXPO.L	Buy	N/A	172p	21 Nov 2013
Fortescue Metals Group Ltd ^{4, 16}	FMG.AX	Buy	N/A	A\$5.78	22 Nov 2013
Gindalbie Metals Ltd ^{2, 4, 20a}	GBG.AX	Neutral (CBE)	N/A	A\$0.12	22 Nov 2013
Grange Resources Limited	GRR.AX	Neutral	N/A	A\$0.25	22 Nov 2013
IRC Limited	1029.HK	Buy	N/A	HK\$0.80	21 Nov 2013
Kumba Iron Ore ¹⁶	KIOJ.J	Neutral	N/A	RCnt40,099	21 Nov 2013
MMX Mineração e Metalicos ^{20b}	MMXM3.SA	Suspended	N/A	R\$0.64	21 Nov 2013
Mount Gibson Iron Limited	MGX.AX	Neutral	N/A	A\$1.11	22 Nov 2013
NMDC	NMDC.BO	Suspended	N/A	Rs130.15	21 Nov 2013
Rio Tinto Limited ^{8, 22}	RIO.AX	Buy	N/A	A\$65.28	22 Nov 2013
Rio Tinto Plc ^{2, 4, 5b, 16, 22}	RIO.L	Buy	N/A	3,247p	21 Nov 2013
Usinas Siderurgicas de Minas Gerais ¹⁶	USIM5.SA	Sell	N/A	R\$12.33	21 Nov 2013
Vale ADR (PN) ^{5b, 6a, 16}	VALEp.N	Not Rated	N/A	US\$13.94	21 Nov 2013

Source: UBS. All prices as of local market close.

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