EQUITY RESEARCH

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Miningball

Long-term data suggests mining is poised for a sustained up-cycle

The mining sector is a volatile sector with rapid macro influenced short-term cycles overlaying difficult to judge long-term cycles. Using *Moneyball* as inspiration, we have created an industry database that aggregates long-term financials and production. From this, we show how new statistics like ExCap/EV and CC/MT can help to peg where we are in the cycle. In our view, the data suggests that the sector is in a very compelling starting point with global long-term demand for metals likely to remain robust. On the back of this analysis we upgrade Rio Tinto to Top Pick.

Miningball - looking at the sector in a different way

Whilst recognising that individual management strategies and different commodity exposure can have a large impact on individual share performance, the sector tends to move through periods where the wider environment becomes a main driver of performance. Such is the nature of producing in a price and cost taking environment. In order to isolate the noise from individual company decisions we have aggregated large liquid mining company financials going back to 1994 and have aggregated production into equivalent copper units. This produces a full set of implied financials which provide a series of insights.

In the spirit of *Moneyball*, the film about an American baseball team using detailed statistics to improve performance both via player acquisition and onfield performance, we have created some statistics which we think should help investors with the wider investment decision for the mining space.

- ExCap/EV vs. forward 4-year return has provided a reasonable inverse signal historically. Current industry expansion capex to EV is the lowest that it's been since 1994, indicating forward equity returns could average ~30% over the coming 4 years.
- CC/MT - Cash costs to million tonnes of copper eq. production has moved from $4bn/mt to a peak of $10bn/mt in 2012. It has now fallen to $6bn; however, historically this has lagged EBITDA margin changes, indicating there may still be further cost compression to come.
- TC/PB - Total capex to production base has also been falling since 2012 and a low level tends to mean higher ROCE as lower capex activity means better capital efficiency.

We have also analysed the relationship between metals demand and GDP per capita growth on a global basis. This analysis shows that although Chinese metals consumption should remain stable, other emerging economies are on the cusp of seeing sharp upticks in metal consumption that should underpin demand at least for another decade.

Upgrading Rio Tinto to Top Pick

Rio Tinto rates very highly on many company-specific metrics including balance sheet, margins, long-life assets and growth. We attribute the recent sell-off to a derating as investors continue to remain wary of China. At ~2 standard deviations below its recent valuation averages, we expect this will normalise. Stability in iron ore prices, a structurally improving aluminium market and increasing potential for special dividends, will, in our view, allow RIO to outperform over the coming months.

Anglo American estimate and price target changes

We are adjusting Anglo American numbers post Q1, marking-to-market which reduces our target price to 1800p from 1850p previously. Please see page 14 for details.

Priced as of prior trading day's market close, EST (unless otherwise noted).
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All values in USD unless otherwise noted.
For Required Non-U.S. Analyst and Conflicts Disclosures, see page 27.

Miningball – Assessing the long-term cycles using statistics

Since 1994, despite a rapid increase Chinese growth that created a raw materials demand super cycle, the MSCI World Mining Total Return Index is only up 96% vs. the MSCI World Equity index up by 376%. The mining industry has come under substantial criticism for this underperformance. The industry has historically been unable to prove that it can move away from the pro-cyclical capex trap that causes money to be spent when it costs more to build, and then for growth to be delivered when prices and margins fall, causing balance sheet pressure, write-downs and ill-timed asset sales.

However, the mining sector is not always a bad place for investment. Between 2003 and 2013, on a rolling 5-year cumulative return basis, the mining sector outperformed. The supply response in the mining sector can take years with large greenfield projects taking ~7-10 years to come onstream. Due to the long cycle times that arise with such long-dated supply responses, we see the sector as providing significant opportunity for sustained outperformance, if you get the timing right. Our analysis suggests that one of these times is currently upon us.

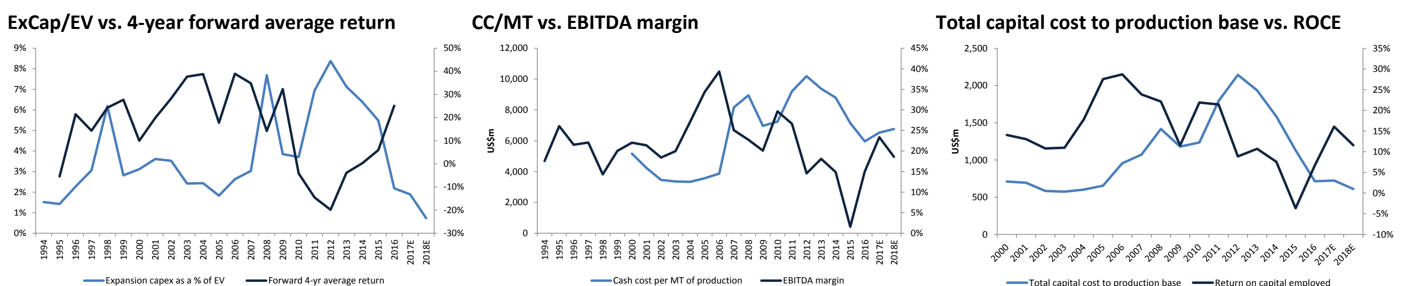
We have aggregated:

- the financials for the major Western listed mining companies going back to 1994; and
- total production and converted it to a copper equivalent basis based on average prices between 2000 and 2016.

See page 17 for notes and methodology and an explanation and background of *Moneyball*.

This aggregation of data has provided a full set of implied industry financials, yields and ratios. From this, there are many insights, which help to provide some context for long-term investors in what can be an almost unbearably volatile sector, especially at sector turning points.

Exhibit 1: Miningball provides an overview of secular industry trends; we see material upside on a 12-month to 4-year view



Source: Bloomberg, Company reports, RBC Capital Markets estimates

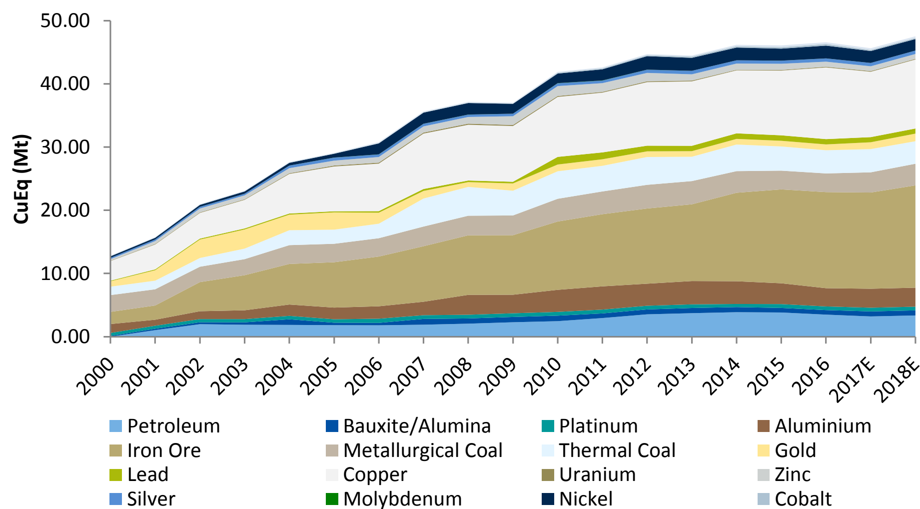
In analysing the data, we have created some new metrics, in the style of *Moneyball*, to attempt to provide a better understanding of investing in the mining sector. **Some of our RBC Miningball metrics include:**

- Industry-wide **ExCap/EV (expansion capex to EV)** as compared to the forward 4-year return, provides a clear relationship between contrarian investing and future equity performance. ExCap/EV is currently the lowest it has been since 1994. Were historical relationships to hold, this would imply *30-50% average sector equity returns* over the coming 4 years, signalling a compelling long-term entry point.

- The production aggregation combined with cost data allows us to create **CC/MT (cash cost per million tonnes**) which shows substantial pro-cyclical changes in the cost base through the cycle. It also tends to lag behind industry EBITDA margin (as lower margins shift mine plans towards higher margin production). This suggests the recently declining costs may still have further to go before their eventual turnaround (although consensus has them increasing over the next 2 years).
- **TCC/PB (total capital cost to production base)** shows that capital inefficiency peaked around 2013 at over $2,100/t but has now retraced to nearly $610/t which bodes well for future expansions, once the demand for new metal capacity is required. ROCE tends to be higher when this number is lower.

We see the sector poised for a cycle even stronger than the last. The starting point is more robust and the conservatism that was generated from the 2012-2016 downturn will continue to weigh on boards and management teams for some time. This should increase the forward tension on supply and demand dynamics as new investment will require higher returns to satisfy what is likely to remain a skeptical investor base.

Exhibit 2: Historical industry production by commodity



Based on average prices, 2000-2016.
Source: Company reports and RBC Capital Markets estimates

As we point out through this note, the metrics almost universally point to a relatively constructive cyclical starting point. Macro twists and turns will continue to keep the sector volatile, especially with increased financialisation of commodities, something that we expect will continue. This is especially true with metals price-setting power increasingly shifting to Asia. However, over the medium term and long term, data suggests the underlying cyclical factors will outweigh the short-term macro oscillations. Even though the sector has performed very well over the past year, and undergone a sharp correction, the data suggests there is substantial upside potential, especially with attractive fundamental valuations for new long-term mining sector equity investment.

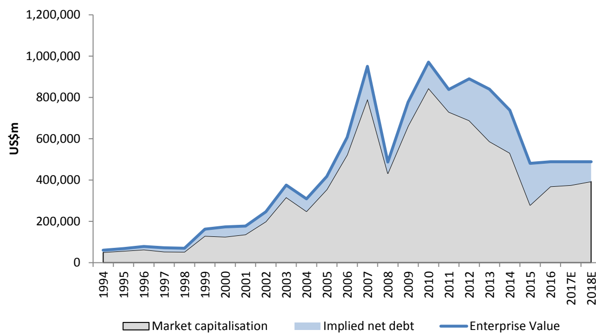
RBC is 15% ahead of consensus EBITDA for the London diversifieds over the next 2 years, implying an average 48% 12-month upside (versus consensus at 26%). We see potential for Rio Tinto to rerate sharply in the near term. Following the recent pullback, with RIO's EV/EBITDA now trading 2.3 standard deviations below its consensus 2-year average, combined with our still positive view of the iron ore market, and increasing confidence in the aluminium market, **we raise our recommendation on Rio Tinto to Top Pick (see page 14).**

ExCap/EV (expansion capex to EV)

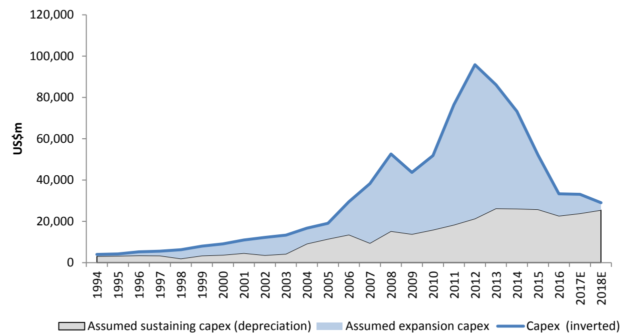
The enterprise value of the listed mining sector has followed a volatile path, increasing ten-fold between 1994 and 2011 before falling to the current ~$488bn. The initial growth was due both to the super cycle, but also to the series of the listings which occurred in the 2000s. Although the data set is missing government or private companies like Codelco, Hancock Prospecting, as well as domestic Chinese production, the data captures a representative sample of the industry as a whole.

Exhibit 3: Enterprise value, and spending on future growth, have pulled back significantly

Industry Enterprise Value



Industry Capital Expenditure



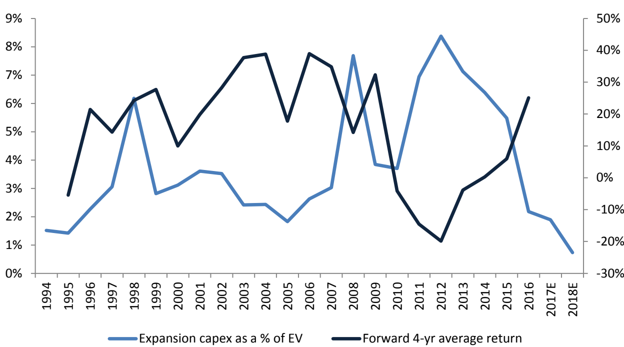
Note – see page 17 for explanation on the future years enterprise value and market cap placeholder assumptions.
Source: Bloomberg, Company reports, RBC Capital Markets estimates

Total capex follows a similar path. If we assume depreciation is at a representative level for sustaining capex, the implied level of expansion capex has moved to sharply lower levels, almost negligible into 2018 based on current company guidance.

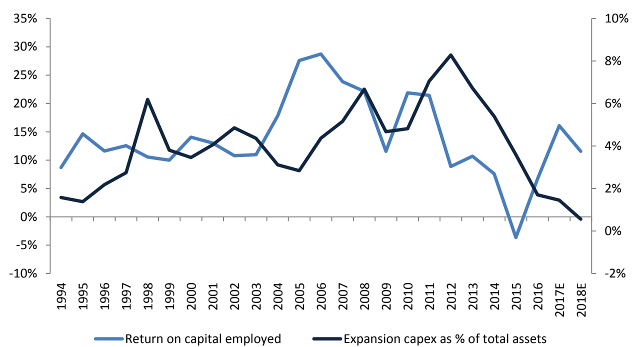
Combining these two data sets, we calculate **ExCap/EV**. Exhibit 4 shows the forward 4-year annualised equity return plotted against ExCap/EV. The exhibit on the right shows ExCap/Assets to ROCE. It is clear that there is a historical relationship between lower levels of capital spending and future returns and we would expect this to continue over the medium term.

Exhibit 4: Annualised forward total equity return could be pushing into the ~30%+ level

ExCap/EV vs. Forward 4-year annual total return



ExCap/Assets vs. ROCE



Source: Bloomberg, Company reports, RBC Capital Markets estimates

1) The low expansion capex places a constraint on meeting medium-term demand, indicating commodity prices should move higher (all else equal).

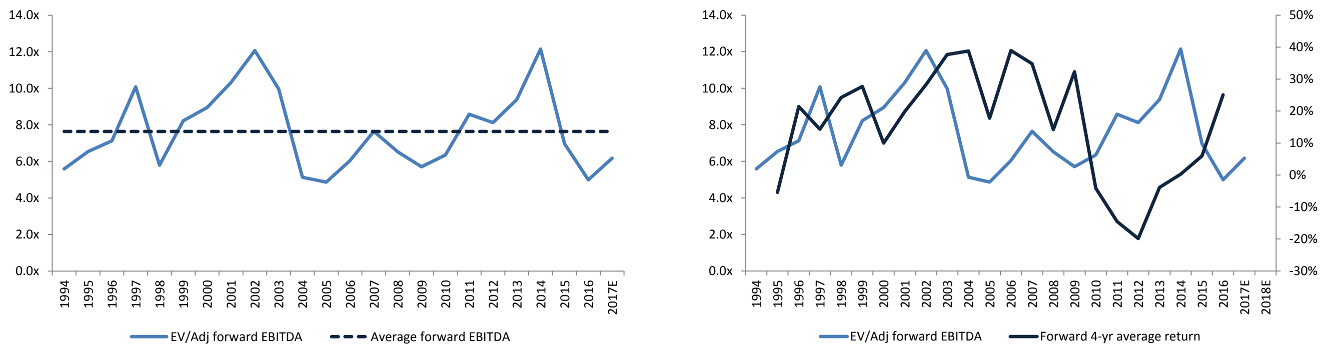
2) The lower capex activity reduces the risks of the equities with less delivery, budget and financing risk.
3) The more growth the sector pushes, the more pressure on the cost spiral, which reduces returns across the board (not just making capex more expensive, but all costs).

Should historical relationships hold, the ExCap/EV, based on 2017E-2018E consensus overall capex levels, suggests that there may be 30-50% average 4-year returns on the horizon until ExCap/EV recovers. Investors are further protected from what is likely to be a growing EV into higher prices, pressuring the ratio going forward. The ExCap/Assets vs. ROCE suggests that the industry is already underinvesting, creating a parallel in the chart to the 2003 period.

Without overlaying demand forecasts, it is impossible to judge what level of expansion capex is actually required going forward. As we highlight in the demand section below, long-term global per capita GDP growth has been a good indicator of long-term metals demand, and it continues to grow. In summary, for many reasons, ExCap/EV ratio has been a good indicator of forward equity returns.

Valuations remain stubbornly low. The equities are pricing current cash flows at a very modest level, which could provide further equity uplift moving forward. Exhibit 5 shows historical forward EV/EBITDA (consensus). The peak levels seen in 2002 and 2014 likely edge the average up a little higher than is warranted (we see fair value for diversifieds as 6.5x-7.0x EV/EBITDA). Regardless, the current levels remain compelling from an entry point perspective. This is especially true in that consensus levels do not by-and-large price-in the potential uplift to industrial metals and minerals prices over the medium term if our long-term cyclical analysis on likely underinvestment is correct.

Exhibit 5: As expected, lower EV/adj EBITDA has also meant promising future returns



Source: Bloomberg, Company reports, RBC Capital Markets estimates

The dawn of the Megacycle?

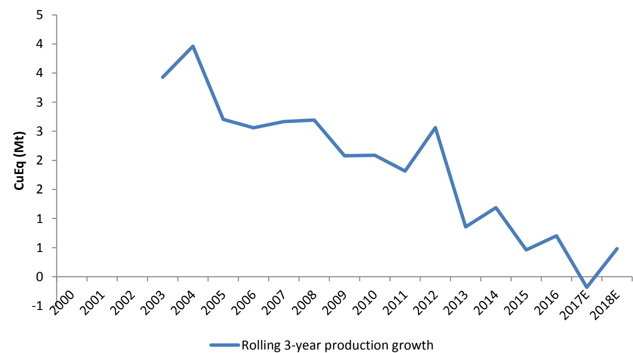
The data shows, unsurprisingly, that the sector is cyclical. What we find fascinating is that the downturn from 2012-2016 was so intense that most of the data sets are now showing extreme cyclical levels. As we have anecdotally pointed out at numerous times, the behaviours of the mining management has changed (for now). Starting with the success from cutting excess thermal coal and zinc production, Glencore was able to take leadership in focusing on meeting market demand rather than "*maximising*" sunk capital utilization. This has spread to the iron ore industry where Rio Tinto's "*Value over Volume"* mantra is a noticeable shift in strategic culture following the change of CEO. We are seeing more rationality in production across the board and financing remains sparse for greenfield projects. Investors are demanding discipline and management teams are largely delivering.

Although the rhetoric suggests that this time is different, and an appropriate level of skepticism is advised, the data does back up the above anecdotal trends. In our view, the sector has rarely been positioned in as constructive a position as it is now and will take time to unwind with the inflexibility of certain data sets (for instance, total production is likely to fall over the medium term if expansion capex is nearing zero) as well as vastly improved cash situations (free cash flow yields have never been higher).

Exhibit 6: Total production has stabilised and production growth potential is low

Total copper equivalent production

Rolling 3-year production growth

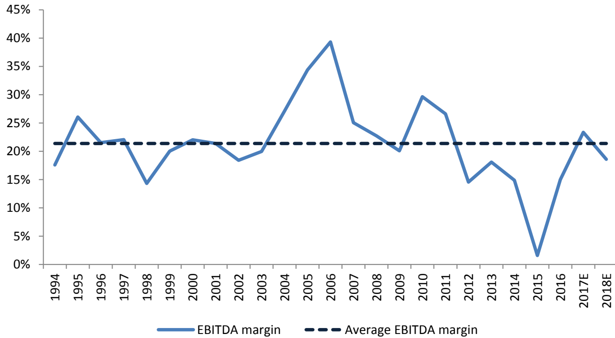


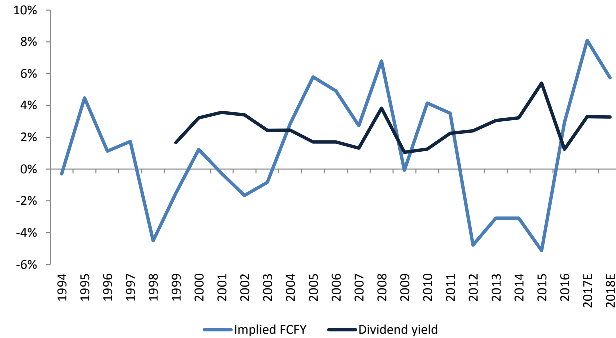
Source: Bloomberg, Company reports, RBC Capital Markets estimates

Total copper equivalent production has stayed relatively flat through the 2013-2016 period as the initial impacts of slowing capex levels began to reduce growth trends. Additionally, the removal of production has reduced the production base (either via some small divestments or by closure due to lower prices). This should increase the productivity of the remaining assets as it would be presumed these are better assets and there is more management focus that can be applied where it matters.

The rolling 3-year production growth is now down to sub-2% growth rates and we would not expect (beyond a copper and iron ore led production uptick in 2018) that this will be able to grow with such low levels of planned expansion capex and the lead times that it takes from project start to finish.

Exhibit 7: EBITDA margins have normalised but FCF in 2017 likely to be the highest since 1994

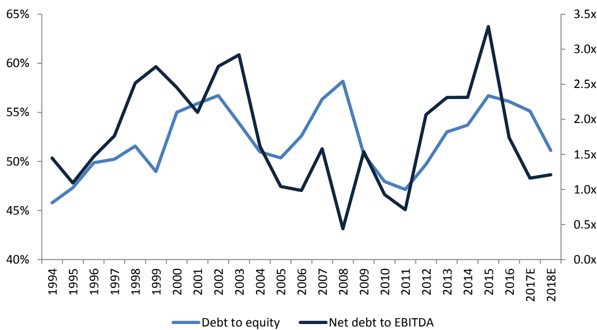


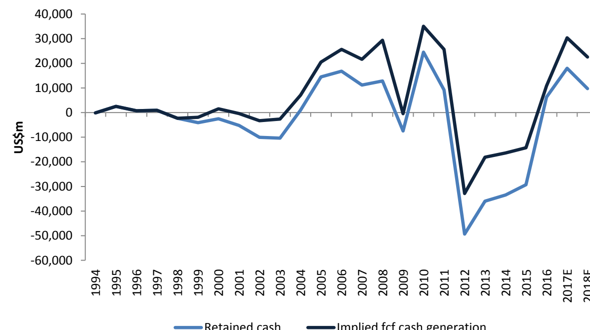


Source: Bloomberg, Company reports, RBC Capital Markets estimates

Consensus forecasts that EBITDA margins will return to their historical averages in 2017. The potential coming tightness in metals markets is, in our view, likely to push up margins towards 2003-2007 levels. From an equity perspective, this is even more interesting considering that with the low capex levels and only normalised margins, free cash yields are the highest that they've been over the past 20+ years. This should allow dividend yields to increase, supporting our thesis that high cash payout ratios will help to provide a rerating for the sector over time.

Exhibit 8: Net debt to EBITDA is low and balance sheets are set to get stronger





Source: Bloomberg, Company reports, RBC Capital Markets estimates

Balance sheets have improved as well, leaving the sector in a more flexible starting point than in the 2003-2007 cycle – debt to equity, and net debt to EBITDA should stay close to 1x, if not improve further as consensus prices move upwards. Based on consensus estimates, we calculate balance sheets will improve by an additional $27bn bringing total net debt to below $100bn by the end of 2018. This is a much different environment than over the past 10 years, whereby the sector generated a total $66bn and retained negative $76bn in cash.

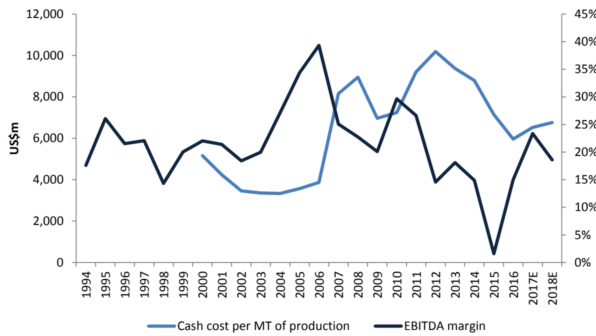
Total cash cost to MT production (CC/MT)

CC/MT shows that the P&L cost per MT of production has moved from ~$5.4bn in 2002 to a peak of $12.0bn in 2012, before falling again to $7.0bn/mt (based on consensus estimates) for 2017 and 2018. There is likely more than just cost inflation and deflation working through this data set, although we would speculate that this is the majority of the causation. With asset divestments and asset closures, the average levels could reasonably be assumed to

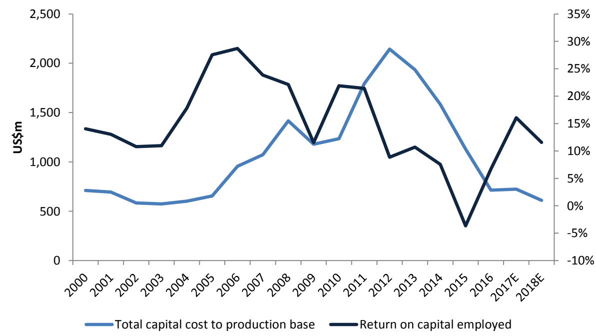
have fallen over the past couple of years as the quality of the production has increased (also via the delivery of lower cost new production, especially in iron ore). This said, there appears to be a clear lagged relationship between CC/MT and the EBITDA margin – showing the procyclicality of investment in better times. Should this trend hold going forward, the lack of overall spend in the industry could potentially indicate that the cost savings, either through environmental factors, or more likely, improved productivity, could see further unit cost gains before turning around.

Exhibit 9: Cost of production has rolled but the lagged association with EBITDA margin means there is still more potential deflation to push through

Cash cost per Mt of production and EBITDA margin



Total capital cost to production base vs. ROCE



Source: Bloomberg, company reports, RBC Capital Markets estimates

Total capital cost to production base (TC/PB)

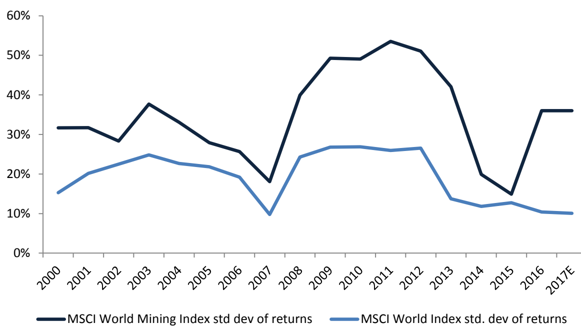
The capex intensity of production is another factor which has dampened returns. TC/PB has also returned to lows, suggesting that eventual capital spending may not cost as much as recent history might suggest (see Exhibit 9, RHS). Much like other cyclical forces in the sector, there is a substantial impact that comes from spending alongside with the cycle. The above chart helps to explain the increasing capex blowouts in the early part of the decade, the poor equity returns, and the limited new capex spending since. We would anticipate this to rise relatively sharply into the next cycle as there are few low cost, large-scale assets available for development, but for now it should remain tempered.

But what about the demand in this volatile sector?

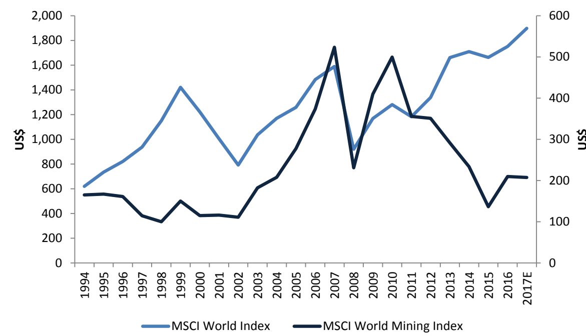
The mining sector has a persistent and substantially higher beta than the wider market. The macro linkages are obvious with the interactions between interest rates, commodity prices, speculation and a high sensitivity to short-term cyclical growth changes. This makes the sector relatively more difficult to assess as returns and certainty need to be outsized for the sector to take an average share of its long-term global equity value.

Exhibit 10: The mining sector's volatility is here to stay

Standard deviation of total returns – rolling 5 yrs



Mining vs market absolute performance



Source: Bloomberg, Company reports, RBC Capital Markets estimates

Volatility stayed well ahead of the wider market over the past 17 years. We do not expect this to change. We do however expect that the lower relative volatility seen between 2003 and 2007 is likely to repeat through the next few years. Stronger balance sheets, higher dividends, rising margins, and persisting cost stability should help to reduce the earnings and share price volatility going forward.

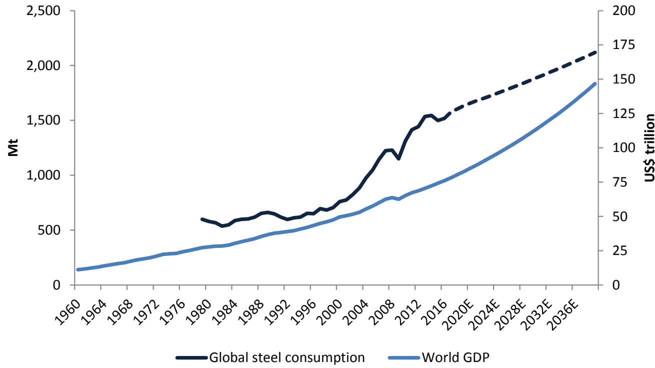
However, a problem that besets many investors when looking at the sector, even after assessing the above analysis, is that all of this presumes that metals demand is sustainable. This is especially important now, with the ongoing shift in the Chinese growth model. This creates uncertainty (rightly so), as well as misconceptions, of what is happening to metals demand.

The 2000s super cycle was linked inexorably with China. We think the next cycle will be different. China will remain a key constituency in global metals demand, but wider EM GDP per capita growth brings more countries to the level where we should expect a sharp uptick in their metal intensity. China's "One Belt, One Road" program looks increasingly likely to provide the initial capital to help fund metal-intensive projects in Southeast and Central Asia (potentially bringing forward increased metal intensity that is not captured in our current estimates). In the medium term, countries with large populations like India and Indonesia, will begin to reach critical mass.

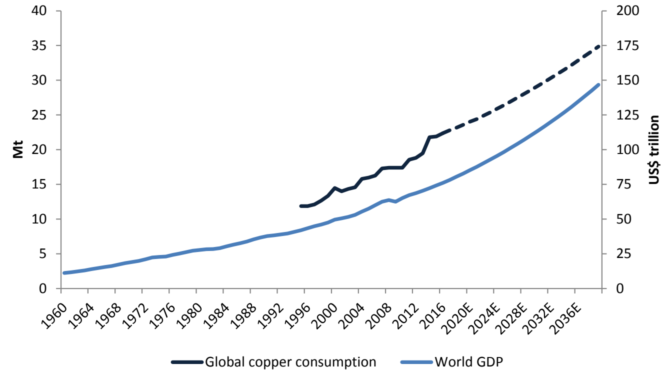
Metals demand has exhibited a close historical relationship with world GDP growth, with a pick-up in consumption rates in the 2000s as more of the world's population moved to middle income levels. (We have used long-term consumption growth rates from the World Steel Association and ICSG for 2021-2040.)

Exhibit 11: We expect that growing world GDP and the emergence of more EM countries reaching lower-middle income will underpin metals demand

Global steel consumption vs. world GDP



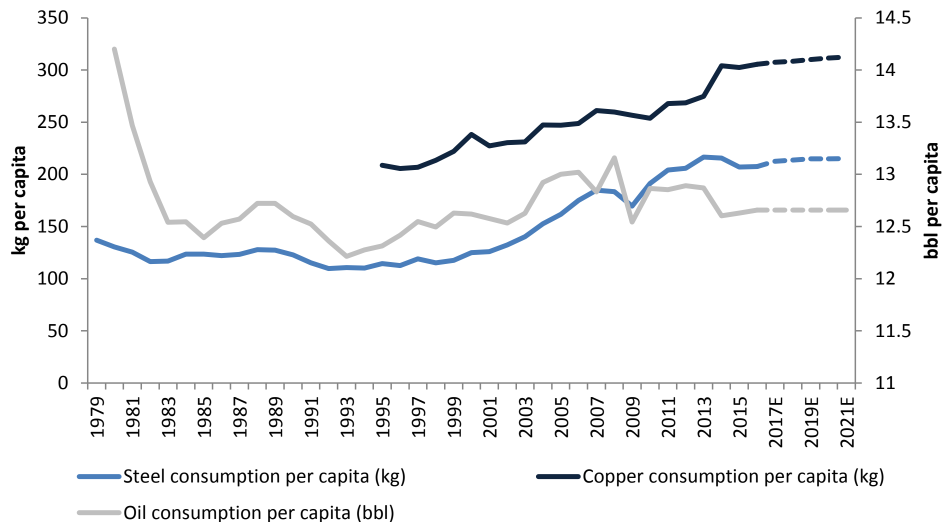
Global copper demand vs. world GDP



Source: Bloomberg, RBC Capital Markets, World Steel Association, ICSG, World Bank

On a per capita consumption basis, there has been a consistent edging up of demand levels in steel and copper since the late 1990s vs. more modest consumption in energy.

Exhibit 12: Global per capita metals consumption has continued to rise, even after the end of the Chinese super cycle

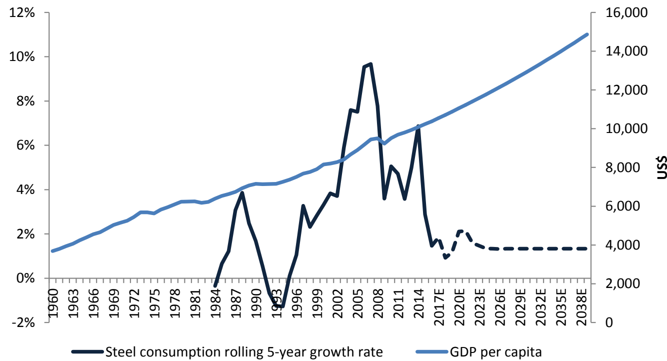


Source: RBC Capital Markets, World Bank, WSA, ICSG, Bloomberg

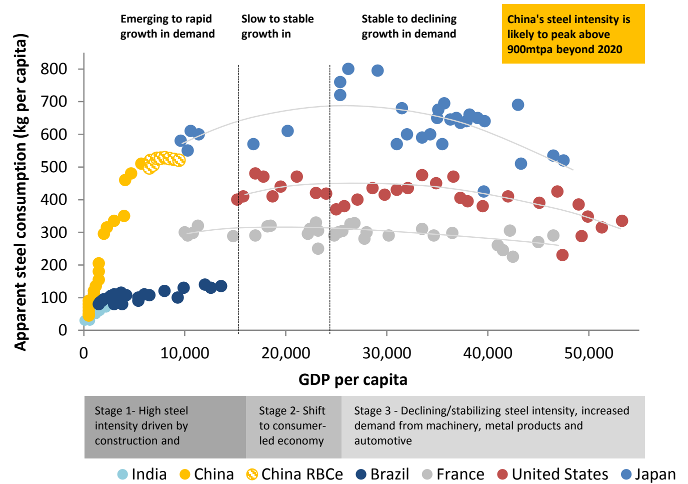
We think this can be explained by the chart below. According to analysis from E&Y, metal intensity in more mature economies has tended to peak at GDP per capita levels of USD15,000 and above. Over the long term, GDP per capita has increased at a very constant rate. Even global economic disruptions, like that in 2008, hardly appear in the data. (We have forecasted long-term global GDP growth based on World Bank and OECD projections for population and economic growth.)

Exhibit 13: Even without another China, growing global economic activity should still allow for metals consumption growth

Global steel consumption growth rate vs. GDP per capita



Apparent steel consumption vs. GDP per capita

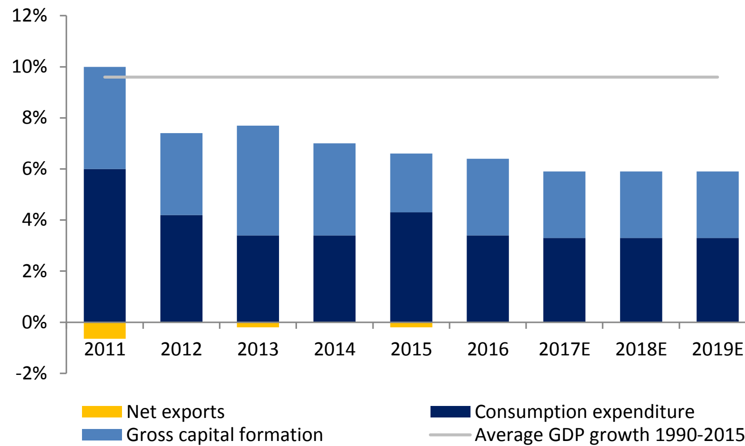


Source: Bloomberg, RBC Capital Markets, E&Y

As can be seen from our global steel consumption growth rate chart, forecast growth rates are not expected to go through another global boom like the one that China caused. But as other EM countries see increasing per capita steel consumption from the last decade, there is unlikely to be a peak in global steel demand for some time. Historically, per capita steel consumption has peaked at ~USD15,000 p.a. Based on the World Bank GDP growth forecasts this will only be reached by 2041. We would expect other metals demand to not peak until later.

In regards to steel consumption, there are many middle income countries like Turkey (USD11,523 p.a.), Brazil (USD11,212 p.a.), Russia (USD11,145 p.a.), who should see stable consumption rates in relatively higher structural growth environments. Growth should be bolstered by large population bases in Indonesia (USD3,834 p.a.) and India (USD1,752 p.a.), which combined are bigger populations than China (with higher growth rates). China itself, although having had a higher-than-normal steel consumption intensity, is not expected to reach USD15,000 p.a. until 2032 (assuming 0.5% population growth and 6% GDP growth).

Exhibit 14: Contribution to GDP growth in China remains stable, even with rebalancing



Source: World Bank, RBC Capital Markets

We therefore expect that with still positive GDP growth, metals demand growth will stay positive for some time.

It is beyond the scope of this note, but with technological innovations, in our view, there is a risk going forward that technology and maturing growth could cause diverging demand rates within the commodities complex, with oil or platinum or even iron ore seeing their relative usefulness dissipate, whilst others increase. There will also be underlying shifts in relative supply and demand within the complex that will cause varying returns based on the commodity and this is certainly to continue. We realise that there will be better and worse exposures within the industry at various times. **Unless there is a dramatic shift in long-term growth rates, however (perhaps as was seen during World War I or World War II), regardless of the oscillations of China in the short term, long-term commodity demand is likely to remain robust. This, combined with initial underinvestment in supply to meet this growing demand should create strong future returns in the 2017-2022 period.**

When to sell?

We have been positive on the diversified miners in London over the past year, and maintain our constructive outlook on the space. This analysis has bolstered our expectations that equity values will start rising once again, into a new cycle where the potential for the industry to deliver the required supply to meet global demand is low, which should mean higher prices and new growth opportunities. Our current upside expectation for the group on a 12-month basis is 48%, but we would expect mining equities to achieve significant upside over the coming years beyond this.

Unfortunately, this won't last forever. The above analysis shows the various ways that this sector has lended to long-term cycles. The current data suggests we are at the cusp of a new cycle (and probably a large one) but as we progress through the cycle the dynamics listed throughout this note will invariably change. As EBITDA margins rise, costs will rise as mines chase lower margin production. Growth will creep back (at first helping sentiment and NAV valuations) and then accelerate as balance sheets and market opportunities allow for more returns. This will see capex costs increase causing ROCE to begin to fall. Production will likely overshoot and some short-term economic dislocation will cause further destruction of equity value. Therefore, investments in this sector, even for the medium term, need to be watched closely. *We believe that there will come a time, albeit not likely for a few years, where Miningball analysis suggests the opposite of what it does now.*

Whilst accepting that every cycle will be different, and that valuations can oscillate up and down within the wider long-term cycle framework, the RBC Miningball analysis tells us that it would be advisable to sell when:

1) **ExCap/EV moves above 4-5%** – the forward returns historically have moved negative (or at least will begin to fall triggering a de-rating).
2) **EV/EBITDA moves above ~8x** – the forward 4-year average return begins to fall. This is likely to be tricky to assess in practice as the market expectations around commodity prices is likely to reach a peak right before the cycle turns (skewing EV/EBITDA forecasts). However, any high readings on valuation, like in any sensible sector, should be followed.
3) **CC/MT is above $10,000** – With generally falling grades/asset quality and a lack of Tier I projects available, we would expect that the CC/MT metric would increase as time goes on (i.e., this should be increasing independently of the sector cycles). The varying amount of low cost production that can be brought online depending on the commodity also likely skews this data set. The increase in the near term may be partially offset by what we think could be a relatively high level of productivity improvement in the mining sector with different technologies (big data, better operational controls, new improvements in metallurgy, etc.) and more capacity to spend on R&D driving capex costs down. However, we would suggest that when this returns above $10,000 that caution should start to be warranted – if history is a guide, this will be happening when prices are higher, making the decision to sell more challenging.
4) **TC/PB above $1,500/t** – For the coming cycle, capex is likely to increase structurally as larger, lower-grade projects become more compelling options with prices moving back up to incentive levels. This will likely be faced with significant consternation from shareholders who will still have very fresh memories from the 2011-2016 period. That said, TC/PB above $1,500 should be a reasonable exit target as it would indicate production is starting to grow and capital efficiency is beginning to fall, putting pressure on ROCE.

Estimate, price target and rating changes

Anglo American

We have not made any material changes to our estimates in this note, with the exception of pushing through our Anglo American numbers post Q1, marking-to-market which reduces our target price to 1800p from 1850p previously.

Our target price of 1800p is based on a blend of 0.9x NAV (2016E) and 5x 2017E-2018E EV/EBITDA. Our EV/EBITDA multiple of 5x reflects the geopolitical risk discount that Anglo trades at vs. peers due to South African exposure. Our P/NAV multiple of 0.9x also reflects the heightened risk of operating in South Africa. Our price target supports our Outperform rating.

Exhibit 15: Anglo American estimate changes

	2017E	2018E	2019E
EPS, Adj Diluted			
New	$3.45	$2.90	$2.34
Old	*$3.72*	*$2.72*	*$2.31*
CFPS, Adj Diluted			
New	$5.50	$5.00	$4.38
Old	*$6.01*	*$4.93*	*$4.61*
FCFPS			
New	$3.73	$3.16	$2.63
Old	*$4.11*	*$3.09*	*$2.76*

Source: RBC Capital Markets estimates

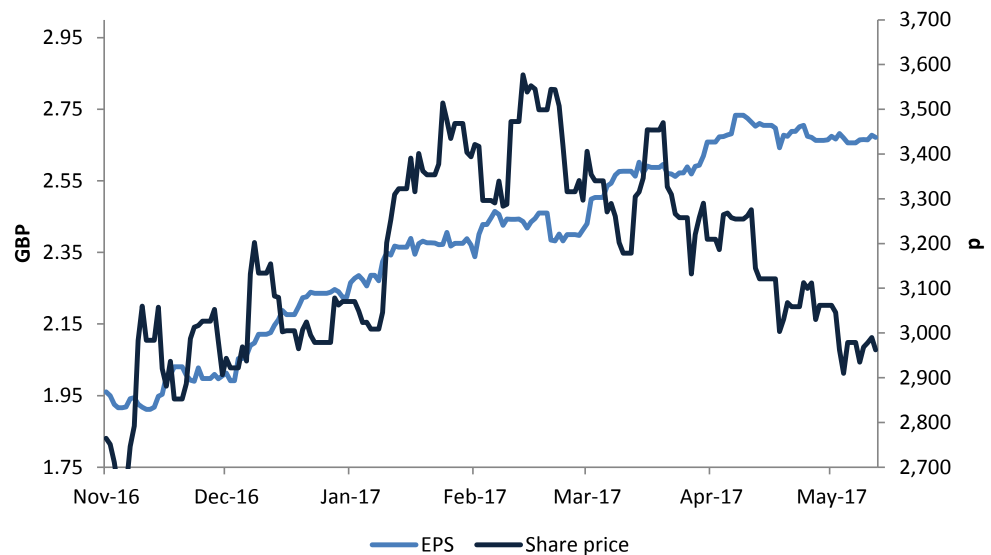
Our commodity price forecasts remain ahead of consensus. Across the sector, we are currently 15% ahead of consensus for calendar 2017E EBITDA and 14% in 2018. This drives implied average 48% upside within our London diversifieds coverage universe vs. consensus at 26%.

Rio Tinto – Upgrading to Top Pick (from Outperform), 4400p target

We are moving Rio Tinto to Top Pick, previously Outperform, following the recent pullback. At 3.3x 2018 EV/EBITDA on our forecasts (3.9x at spot prices) and 0.72x NAV we see significant valuation upside both in rerating potential and from longer-term uplift to our RBC 4,208p NAV. We highlight this is before factoring in the medium-term implications from the low **ExCap/EV** sector multiples, which should help medium-term iron ore prices with the substantial leverage found in this division (which accounts for 66% of our NAV). We also highlight a vastly improved outlook on aluminium as Chinese supply side reforms, both via environmental regulations and overcapacity regulations, should help to push the market back into a stronger structural position. We expect the reshaping and cost-cutting in the smelting division and the expansions in bauxite will begin to take more notice. On 2018E numbers, only iron ore, aluminium and coking coal are below spot consensus estimates, which bodes well for relative mark-to-market upgrades in RIO – even following the recent weakness in commodity prices.

The majority of the recent pullback has been due to a de-rating which we do not see as warranted in the context of the above analysis. Consensus EPS estimates are largely unchanged (which is an implicit upgrade considering the strength in sterling). Based on spot prices, RIO could announce an interim dividend of 90 cents – implying a full-year dividend of 280 cents (vs. consensus of 257 cents) and a gearing ratio of 14%, well below the 20% low end of target gearing levels and may open the potential for a special dividend, or an increased buyback at the half-year results.

Exhibit 16: Rio Tinto's recent sell-off has been due to multiple de-rating



Source: Bloomberg, RBC Capital Markets

There is no question that the iron ore market, Chinese steel industry and Chinese financial conditions are creating uncertainty in the near term. We continue to expect uncertainty to persist. However, we expect that Chinese authorities maintain support for the economy and will provide liquidity from the PBOC when necessary. We continue to expect that Chinese steel demand will be better than expected through 2017 (currently running at +10% YTD) and that improving structural margins for Chinese steel as well as the potential for iron ore supply to continue to underwhelm as we approach a well understood surplus, will allow prices to settle higher than expected.

We continue to remain constructive on the sector as a whole and this can be seen by significant upside we calculate across the board. We see Rio Tinto's strong balance sheet, its long-life, low cost asset base and its recent sharp de-rating into what we expect will be stable Chinese growth through the year drive heightened investor interest. We do forecast higher upside in Glencore and Anglo American on a 12-month view, and continue to recommend investors invest in these companies. However whether it's the time it takes for Glencore to prove-out our ahead-of-consensus marketing profits and to transact more accretive deals or for Anglo's low-multiple holding pattern in advance of any South African restructuring, **we see a straightforward investment story for Rio Tinto in the short term, especially into the half-year results in August.**

Exhibit 17: Value across the board; we expect RIO to recoup some of its recent valuation losses

RBC Base Case

	Ticker	Rating	Price	Target price	Upside	Mkt Cap (US$ M)	Net Debt 2016A (US$ M)	EV (US$m)	adj NAV	P/NAV	2017E Net Debt (US$M)	2017E EBITDA	2017E EPS	2017E P/E	2017E P/CFPS	2017E FCF Yield (%)	2017E EV/EBITDA	2017E ND/EBITDA	2017E Div yield	2018E Net Debt (US$M)	2018E EBITDA	2018E EPS	2018E P/E	2018E P/CFPS	2018E FCF Yield (%)	2018E EV/EBITDA	2018E ND/EBITDA	2018E Div yield
BHP Billiton	BLT	SP	1191p	1525p	28.1%	89,207	20,057	115,045	1470p	0.81x	11,984	24,052	$1.96	7.8x	4.4x	15.0%	4.4x	0.4x	6.4%	5,999	21,482	$1.59	9.7x	4.8x	12.3%	4.1x	0.1x	5.2%
Rio Tinto	RIO	TP	3020p	4400p	45.7%	72,296	10,191	88,927	4208p	0.72x	4,147	22,444	$6.21	6.3x	4.6x	14.2%	3.3x	0.2x	9.6%	2,738	18,147	$4.65	8.4x	5.6x	10.5%	3.3x	0.2x	7.2%
Glencore Plc	GLEN	OP	294p	450p	53.1%	53,992	15,526	67,147	411p	0.71x	10,048	15,007	$0.40	9.4x	3.1x	14.2%	4.5x	0.7x	4.2%	4,816	15,226	$0.42	9.1x	5.1x	15.1%	4.4x	0.3x	4.4%
Anglo American	AAL	OP	1075p	1800p	67.5%	17,868	8,487	31,664	1908p	0.56x	3,305	9,457	$3.45	4.0x	2.5x	28.6%	3.3x	0.3x	12.4%	2,788	8,514	$2.90	4.8x	2.8x	22.9%	3.1x	0.3x	10.4%
Average					**48.6%**					**0.70x**				**6.9x**		**18.0%**	**3.9x**	**0.4x**	**8.2%**				**8.0x**		**15.2%**	**3.7x**	**0.2x**	**6.8%**

Spot commodity and currencies

	Ticker	Rating	Price	Target price	Upside	Mkt Cap (US$ M)	Net Debt 2015A (US$ M)	EV (US$m)	adj NAV	P/NAV	2017E Net Debt (US$M)	2017E EBITDA	2017E EPS	2017E P/E	2017E P/CFPS	2017E FCF Yield (%)	2017E EV/EBITDA	2017E ND/EBITDA	2017E Div yield	2018E Net Debt (US$M)	2018E EBITDA	2018E EPS	2018E P/E	2018E P/CFPS	2018E FCF Yield (%)	2018E EV/EBITDA	2018E ND/EBITDA	2018E Div yield
BHP Billiton	BLT	SP	1191p	1525p	28.1%	89,207	20,057	115,045	1255p	0.95x	14,045	19,430	$1.36	11.3x	5.4x	11.7%	5.5x	0.5x	4.4%	8,534	19,404	$1.31	11.7x	5.3x	10.5%	4.7x	0.3x	4.3%
Rio Tinto	RIO	TP	3020p	4400p	45.7%	72,296	10,191	88,927	3677p	0.82x	6,269	18,206	$4.66	8.4x	5.6x	10.6%	4.3x	0.3x	7.2%	4,460	16,775	$4.14	9.4x	6.0x	9.1%	3.9x	0.3x	6.4%
Glencore Plc	GLEN	OP	294p	450p	53.1%	53,992	15,526	67,147	401p	0.73x	11,016	14,512	$0.38	10.1x	3.2x	13.5%	4.6x	0.8x	4.1%	6,732	14,349	$0.37	10.4x	5.4x	13.8%	4.7x	0.5x	4.2%
Anglo American	AAL	OP	1075p	1800p	67.5%	17,868	8,487	31,664	2140p	0.50x	3,961	8,196	$2.86	4.8x	2.9x	23.8%	3.9x	0.5x	10.3%	3,167	8,440	$2.82	4.9x	2.8x	22.5%	3.2x	0.4x	10.2%
Average					**48.6%**					**0.75x**				**8.7x**		**14.9%**	**4.5x**	**0.5x**	**6.5%**				**9.1x**		**14.0%**	**4.1x**	**0.3x**	**6.2%**

Mark-to-market changes

	Ticker	Rating	Price	Target price	Upside	(US$ M)	2015A	EV (US$m)	adj NAV	P/NAV	2017E EBITDA	2017E EPS	2017E EBITDA%	2017E EPS%	2018E EBITDA	2018E EPS	2018E EBITDA%	2018E EPS%
BHP Billiton	BLT	SP	1191p	1525p	28.1%	89,207	20,057	115,045			-4,622	($0.60)	-19.2%	-30.8%	-2,078	($0.28)	-9.7%	-17.4%
Rio Tinto	RIO	TP	3020p	4400p	45.7%	72,296	10,191	88,927			-4,237	($1.54)	-18.9%	-24.9%	-1,372	($0.51)	-7.6%	-11.0%
Glencore Plc	GLEN	OP	294p	450p	53.1%	53,992	15,526	67,147			-494	($0.03)	-3.3%	-6.8%	-877	($0.05)	-5.8%	-11.8%
Anglo American	AAL	OP	1075p	1800p	67.5%	17,868	8,487	31,664			-1,261	($0.59)	-13.3%	-17.0%	-73	($0.08)	-0.9%	-2.6%
Average													**-13.7%**	**-19.9%**			**-6.0%**	**-10.7%**

Consensus

	Ticker	Rating	Price	Target price	Upside	Mkt Cap (US$ M)	2015A (US$ M)	EV (US$m)	Avg. Rating	2017E - RBC vs. Consensus Net Debt (US$M)	EBITDA	EPS	EBITDA%	EPS%	Cons EV/EBITDA	Cons P/E	2018E - RBC vs. Consensus Net Debt (US$M)	EBITDA	EPS	EBITDA%	EPS%	Cons EV/EBITDA	Cons P/E
BHP Billiton	BLT		1191p	1430p	20.1%	89,207	25,921	115,045	3.31		20,973	$1.35	14.7%	45.7%	5.5x	11.4x		20,198	$1.35	6.4%	18.0%	5.7x	11.4x
Rio Tinto	RIO		3020p	3805p	26.0%	72,296	13,697	88,927	3.97		18,117	$4.60	23.9%	35.0%	4.9x	8.5x		15,151	$3.43	19.8%	35.7%	5.9x	11.4x
Glencore Plc	GLEN		294p	371p	26.2%	53,992	25,889	67,147	4.14		14,140	$0.33	6.1%	22.1%	4.7x	11.5x		13,857	$0.29	9.9%	41.7%	4.8x	13.0x
Anglo American	AAL		1075p	1419p	32.1%	17,868	12,901	31,664	3.63		8,250	$2.33	14.6%	47.9%	3.8x	5.9x		7,001	$1.68	21.6%	72.8%	4.5x	8.3x
Average					**26.1%**								**14.8%**	**37.7%**	**4.7x**	**9.3x**				**14.4%**	**42.0%**	**5.2x**	**11.0x**

Priced as of market close, May 15, 2017, BST.
Source: Bloomberg, Company reports and RBC Capital Markets estimates

Methodology

Our Miningball title is a play on *Moneyball*, an Academy Award nominated film from 2011. The film details the story of Billy Beane, the General Manager of the Oakland Athletics baseball team. In the 1970s, an advanced statistical analysis of baseball, coined *Sabermetrics*, emerged. This strategy utilised historical regressions between on-field performance and various in-game statistics, some of these underappreciated by traditional scouting techniques. There is a typically high connection between wages paid to players and success in most sports leagues. The use of this method in the early 2000s allowed for the Oakland As to compete for the title, despite vastly lower resources. In more "investment friendly" terms, it allowed the team "to generate alpha in player acquisition". We hope that in the spirit of *Moneyball,* that some of these alternate statistics in the analysis above help investors to better assess long-term investments in the mining industry.

The database

We have created a database which has downloaded the historical financials, where available, from Bloomberg and from company websites and then aggregated the data. This data is not meant to be a holistic assessment of the global mining industry, but more as a representative of the larger listed entities, especially where data is available for long periods of time.

Company data used

Company name	Ticker	First year of data	
		Financials	Production
Rio Tinto PLC	RIO LN	1994	2000
VALE SA	VALE3 BZ	1994	2002
Antofagasta PLC	ANTO LN	1994	2000
Alcoa Corp	AA US	1994	N/A
Teck Resources Ltd	TECK/B CN	1994	1999
Freeport-McMoRan Inc	FCX US	1994	2001
MMG Ltd	1208 HK	1994	2008
Grupo Mexico SAB de CV	GMEXICOB MM	1994	2004
Norsk Hydro ASA	NHY NO	1994	2000
First Quantum Minerals Ltd	FM CN	1995	2004
BHP Billiton PLC	BLT LN	1996	2000
Southern Copper Corp	SCCO PE	1996	2000
Anglo American PLC	AAL LN	1999	2000
Vedanta Resources PLC	VED LN	2001	2003
Fortescue Metals Group Ltd	FMG AU	2001	2008
Xstrata Ltd	XTA LN	2002	2004
Glencore PLC	GLEN LN	2007	2010
South32 Ltd	S32 AU	2014	2014

Average prices used

Average price 2000 - 2016		US$
Gold	US$/oz	1,223
Silver	US$/oz	20.2
Bauxite	US$/t	50.0
Alumina	US$/t	300.0
Bauxite/Alumina	US$/t*	175.0
Aluminium	US$/lb	0.9
Metallurgical Coal	US$/t	128.0
Thermal Coal	US$/t	68.0
Cobalt	US$/lb	13.8
Copper	US$/lb	2.4
Iron Ore	US$/t	70.0
Lead	(US$/lb)	0.7
Manganese Ore	US$/t	2.8
Molybdenum	US$/t	13.7
Nickel	(US$/lb)	7.3
Uranium	US$/lb	36.0
Zinc	(US$/lb)	0.8
Petroleum	(US$/boe)	80.0
Palladium	(US$/oz)	488.0
Platinum	(US$/oz)	1,124

*Average of Alumina and Bauxite

Source: Bloomberg and Company data

We have used the FTSE350 Mining index (converted to USD) for returns data and the MSCI World Mining index for volatility data. Where data has not been available we have calculated a proxy (i.e., total interest rate where we have used USD 10yr +200bp) and have calculated "implied" aggregate numbers based on available data. For cash flow analysis we have added back in write-downs and other adjustments. We are assuming that sustaining capex is equivalent to depreciation (but we highlight in recent times this relationship has not held) and the remaining spend is expansion capex.

Production has been aggregated based on Bloomberg production data (since 2000) or company data where missing. For equivalence purposes, we have calculated an economic value based on the average prices received between 2000 and 2016 annually and then converted this into copper.

We have calculated an aggregated industry P&L and cash flow statement for 2017E and 2018E using Bloomberg consensus revenues, EBITDA, dividend yields, capex and historical

ratios for depreciation. We have assumed that the excess free cash post dividends is used to pay down debt. Assuming enterprise values are constant, this would see a slight increase in expected market cap over the next two years; however, we caveat that the enterprise value is likely to change as well.

We will endeavor to keep this model updated going forward.

Exhibit 18: Rio Tinto financial model

Rio Tinto Plc	LSE: RIO		**Target Price**	4400p	**Rating:**	**Top Pick**
RBC Capital Markets	No Shares (m):	1,797			Risk Specifier:	N/A
Tyler Broda +44 207 653 4866	Liq. ($m/day)	203	Share Price (p):	3020p	Implied Return (%):	45.7%
	Market Cap. ($m):	72,296	2017E Dividend ($/sh):	$3.72	Implied Total Return (%):	45.8%
	Ent. Value (M $)	88,927	NAV (GBP/sh):	4208p	P/NAV (x):	0.72x

All USD unless noted — Year End Dec 31

RATIO ANALYSIS		**2016A**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$2.84	$6.21	$4.65	$4.71
Earnings - Basic	$/sh	$2.57	$6.21	$4.65	$4.71
P/E Multiple	x	13.7x	6.3x	8.4x	8.3x
EV/EBITDA	x	6.6x	3.3x	3.3x	2.6x
CFPS (Operating CF pre WC)	$/sh	$4.86	$8.51	$6.97	$7.07
P/CF Multiple	x	8.0x	4.6x	5.6x	5.5x
Free Cash Yield	%	7.5%	14.2%	10.5%	10.7%
Dividends Per Share	$/sh	$1.70	$3.72	$2.79	$2.83
Dividend Yield	%	4.4%	9.6%	7.2%	7.3%
Net Debt	$m	$10,191	$4,147	$2,738	($71)
Net Debt/EBITDA	x	0.8x	0.2x	0.2x	0.0x
Net Debt/Total Cap	%	10%	5%	3%	0%
Interest Coverage (EBITDA/Net interest)	x	13.2x	35.1x	30.1x	31.6x
Gearing (ND/ND+Equity)	x	18%	7%	5%	0%
INCOME STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Revenue	$m	$33,781	$42,118	$37,284	$37,210
Operating Costs	$m	($22,192)	($20,997)	($20,558)	($20,278)
Operating profit		**$6,795**	**$16,597**	**$12,181**	**$12,304**
D&A	$m	($4,794)	($4,525)	($4,544)	($4,627)
Statutory EBIT	**$m**	**$8,694**	**$17,919**	**$13,603**	**$13,779**
Other		($1,329)	($575)	($654)	($681)
Financing Income/Expenses	$m	($1,022)	($639)	($603)	($582)
EBT	**$m**	**$6,343**	**$16,706**	**$12,346**	**$12,515**
Taxes/minorities	$m	($1,726)	($5,553)	($3,983)	($4,046)
Net Income - Reported	**$m**	**$4,617**	**$11,153**	**$8,363**	**$8,469**
Adjustments	$m	($483)	$0	$0	$0
Net Income - Adjusted	**$m**	**$5,100**	**$11,153**	**$8,363**	**$8,469**
Weighted average diluted shares	M	1,797	1,797	1,797	1,797
Underlying EBITDA	$m	$13,488	$22,444	$18,147	$18,406
CASH FLOW STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	$4,617	$11,153	$8,363	$8,469
D&A	$m	$4,794	$4,525	$4,544	$4,627
Taxes Paid	$m	($1,521)	($5,302)	($3,941)	($3,862)
Non Recurring/Other/Exploration	$m	$575	$4,769	$3,696	$3,414
Net Operating Cash Flow	$m	**$8,465**	**$15,145**	**$12,663**	**$12,648**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($3,012)	($4,904)	($5,085)	($4,884)
Other (excl exploration and disposals)	$m	$908	$116	$0	$0
Net Investing Cash Flow (incl. stripping)	$m	**($2,104)**	**($4,788)**	**($5,085)**	**($4,884)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	($4,948)	$0	$0	$0
Dividends	$m	($2,725)	($4,313)	($6,169)	($4,956)
Interest, Equity Raise & Other	$m	$182	$0	$0	$0
Net Financing Cash Flow	$m	**($7,491)**	**($4,313)**	**($6,169)**	**($4,956)**
Increase (Decrease) in Cash	$m	($1,130)	$6,044	$1,409	$2,809
Cash at End of Year	$m	**$8,189**	**$14,233**	**$15,642**	**$18,451**
Free Cash Flow (OPcf - Capex)	$m	$5,453	$10,241	$7,578	$7,765
BALANCE SHEET		**2016A**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$8,201	$14,245	$15,654	$18,463
Other Current Assets	$m	$6,885	$6,189	$5,923	$6,028
PP&E & Mining Interests	$m	$58,855	$59,118	$59,658	$59,915
Other Long Term Assets	$m	$15,322	$15,696	$16,080	$16,476
Total Assets	$m	**$89,263**	**$95,248**	**$97,315**	**$100,882**
Short term debt	$m	$922	$1,839	$1,839	$1,839
Other Current Liabilities	$m	$8,478	$7,623	$7,496	$7,550
Long Term Debt	$m	$17,470	$16,553	$16,553	$16,553
Other Long Term Liabilities	$m	$16,663	$16,663	$16,663	$16,663
Total Liabilities	$m	**$43,533**	**$42,678**	**$42,551**	**$42,605**
Shareholder Equity	$m	$45,730	$52,570	$54,764	$58,277
Total Liabilities & Shareholder Equity	$m	**$89,263**	**$95,248**	**$97,315**	**$100,882**
FINANCIAL RATIOS		**2016A**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	10.1%	21.2%	15.3%	14.5%
Return on Capital (ROIC)	%	5.2%	11.7%	8.6%	8.4%
CFPS (Operating CF pre WC)	$/sh	$4.86	$8.51	$6.97	$7.07
FCFPS (Operating CF-Capex)	$/sh	$3.03	$5.70	$4.22	$4.32

All USD unless noted — Year End Dec 31

PRICES & EXCHANGE RATES		**2016A**	**2017E**	**2018E**	**2019E**	**2020E**
Alumina price	US$/t	265	310	300	300	335
Aluminium price	US$/lb	0.73	0.83	0.85	0.85	0.95
Copper price	US$/lb	2.21	2.64	2.75	2.85	3.50
Rutile price	US$/t	813	900	1,000	1,100	1,100
Diamond prices	US$/ct	60	60	60	60	60
Iron Ore fines CFR China (62%)	US$/dmt	58.33	83.91	65.00	70.00	65.00
Hard coking coal	US$/t	117	179	150	120	120
Semi-soft coking coal	US$/t	85	145	115	85	85
Thermal coal	US$/t	60	78	75	70	65
Uranium price	US$/lb	40.12	32.50	40.00	45.00	45.00
AUDUSD		0.74	0.74	0.73	0.73	0.74
CADUSD		0.76	0.73	0.74	0.75	0.78

PRODUCTION		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore (Pilbara)	Mt	329	333	345	349
Iron ore (attrib)	Mt	289	297	307	310
Aluminium	kt	3,644	3,553	3,551	3,551
Alumina	kt	8,191	8,143	8,130	8,130
Copper	kt	542	463	511	537
Hard Coking Coal	kt	8,141	7,919	7,800	7,800
Semi-soft	kt	4,101	3,577	3,490	3,490
Thermal coal	kt	17,260	16,986	16,857	16,857
Diamonds	kct	17,952	22,610	25,730	25,684
TiO2 feedstock	kt	1,049	1,232	1,100	1,200
Borates	kt	503	483	480	480
Salt	kt	7,578	7,246	8,000	8,000
Uranium	klb	6,341	4,655	2,720	1,646
CAPEX BREAKDOWN		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	868	1,365	1,384	1,091
Aluminium	$m	870	1,220	1,210	823
Copper & Diamonds	$m	1,449	1,982	2,111	2,687
Energy & Minerals	$m	137	552	541	423
Other	$m	-11	0	0	0
Product group capex	$m	**3,313**	**5,119**	**5,246**	**5,024**
SEGMENT BREAKDOWN (EBITDA)		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	8,492	14,145	10,432	10,886
Aluminium	$m	2,472	4,332	4,268	4,160
Copper & Diamonds	$m	1,399	1,311	1,488	1,803
Energy & Minerals	$m	1,803	3,419	2,619	2,217
Other	$m	($92)	($103)	$0	$0
Product group EBITDA	$m	**14,074**	**23,104**	**18,807**	**19,066**

NET ASSET VALUE	**WACC**	**$m**	**GBP/Sh**	**NAV (%)**
Operating Value				
Iron ore	8.1%	$64,727	27.70	57%
Aluminium	8.1%	$24,349	10.42	22%
Copper & Diamonds	8.1%	$12,755	5.46	11%
Energy & Minerals	8.1%	$10,977	4.70	10%
Total operating assets		**$112,808**	**48.28**	
Corporate		($3,237)	-1.39	
Exploration/Evaluation		($1,056)	-0.45	
Cash		$8,201	3.51	
Debt		($18,392)	-7.87	
Total Net Asset Value		**$98,324**	**42.08**	

Source: Company reports and RBC Capital Markets estimates

Exhibit 19: Rio Tinto financial model at spot commodity and currencies

Rio Tinto Plc	LSE: RIO				Rating:	Top Pick
RBC Capital Markets	No Shares (m):	1,797			Risk Specifier:	N/A
Tyler Broda +44 207 653 4866	Liq. ($m/day)	203	Share Price (p):	3020p		
	Market Cap. ($m):	72,296	2017E Dividend ($/sh):	$2.80		
	Ent. Value (M $)	88,927	NAV (GBP/sh):	3677p	P/NAV (x):	0.82x

All USD unless noted — Year End Dec 31

RATIO ANALYSIS		2016A	2017E	2018E	2019E
Earnings - Adjusted	$/sh	$2.84	$4.66	$4.14	$3.90
Earnings - Basic	$/sh	$2.57	$4.66	$4.14	$3.90
P/E Multiple	x	13.7x	8.4x	9.4x	10.0x
EV/EBITDA	x	6.6x	4.3x	3.9x	3.4x
CFPS (Operating CF pre WC)	$/sh	$4.86	$6.98	$6.49	$6.29
P/CF Multiple	x	8.0x	5.6x	6.0x	6.2x
Free Cash Yield	%	7.5%	10.6%	9.1%	8.9%
Dividends Per Share	$/sh	$1.70	$2.80	$2.48	$2.34
Dividend Yield	%	4.4%	7.2%	6.4%	6.0%
Net Debt	$m	$10,191	$6,269	$4,460	$2,376
Net Debt/EBITDA	x	0.8x	0.3x	0.3x	0.1x
Net Debt/Total Cap	%	10%	7%	5%	3%
Interest Coverage (EBITDA/Net interest)	x	13.2x	28.3x	27.1x	26.9x
Gearing (ND/ND+Equity)	x	18%	11%	8%	4%
INCOME STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Revenue	$m	$33,781	$37,584	$36,005	$34,943
Operating Costs	$m	($22,192)	($20,709)	($20,566)	($20,106)
Operating profit		**$6,795**	**$12,326**	**$10,852**	**$10,186**
D&A	$m	($4,794)	($4,549)	($4,586)	($4,651)
Statutory EBIT	**$m**	**$8,694**	**$13,658**	**$12,189**	**$11,511**
Other		($1,329)	($575)	($621)	($624)
Financing Income/Expenses	$m	($1,022)	($644)	($619)	($601)
EBT	**$m**	**$6,343**	**$12,439**	**$10,949**	**$10,287**
Taxes/minorities	$m	($1,726)	($4,058)	($3,507)	($3,284)
Net Income - Reported	**$m**	**$4,617**	**$8,380**	**$7,442**	**$7,003**
Adjustments	$m	($483)	$0	$0	$0
Net Income - Adjusted	**$m**	**$5,100**	**$8,380**	**$7,442**	**$7,003**
Weighted average diluted shares	M	1,797	1,797	1,797	1,797
Underlying EBITDA	$m	$13,488	$18,206	$16,775	$16,162
CASH FLOW STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	$4,617	$8,380	$7,442	$7,003
D&A	$m	$4,794	$4,549	$4,586	$4,651
Taxes Paid	$m	($1,521)	($4,019)	($3,552)	($3,236)
Non Recurring/Other/Exploration	$m	$575	$3,682	$3,200	$2,912
Net Operating Cash Flow	$m	**$8,465**	**$12,593**	**$11,677**	**$11,329**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($3,012)	($4,917)	($5,114)	($4,897)
Other (excl exploration and disposals)	$m	$908	$116	$0	$0
Net Investing Cash Flow (incl. stripping)	$m	**($2,104)**	**($4,801)**	**($5,114)**	**($4,897)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	($4,948)	$0	$0	$0
Dividends	$m	($2,725)	($3,870)	($4,754)	($4,348)
Interest, Equity Raise & Other	$m	$182	$0	$0	$0
Net Financing Cash Flow	$m	**($7,491)**	**($3,870)**	**($4,754)**	**($4,348)**
Increase (Decrease) in Cash	$m	($1,130)	$3,922	$1,808	$2,084
Cash at End of Year	$m	**$8,189**	**$12,111**	**$13,920**	**$16,004**
Free Cash Flow (OPcf - Capex)	$m	$5,453	$7,676	$6,562	$6,432
BALANCE SHEET		**2016A**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$8,201	$12,123	$13,932	$16,016
Other Current Assets	$m	$6,885	$5,971	$5,828	$5,834
PP&E & Mining Interests	$m	$58,855	$59,107	$59,635	$59,881
Other Long Term Assets	$m	$15,322	$15,700	$16,058	$16,409
Total Assets	$m	**$89,263**	**$92,902**	**$95,452**	**$98,140**
Short term debt	$m	$922	$1,839	$1,839	$1,839
Other Current Liabilities	$m	$8,478	$7,606	$7,469	$7,502
Long Term Debt	$m	$17,470	$16,553	$16,553	$16,553
Other Long Term Liabilities	$m	$16,663	$16,663	$16,663	$16,663
Total Liabilities	$m	**$43,533**	**$42,661**	**$42,524**	**$42,557**
Shareholder Equity	$m	$45,730	$50,240	$52,928	$55,582
Total Liabilities & Shareholder Equity	$m	**$89,263**	**$92,902**	**$95,452**	**$98,140**
FINANCIAL RATIOS		**2016A**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	10.1%	16.7%	14.1%	12.6%
Return on Capital (ROIC)	%	5.2%	9.0%	7.8%	7.1%
CFPS (Operating CF pre WC)	$/sh	$4.86	$6.98	$6.49	$6.29
FCFPS (Operating CF-Capex)	$/sh	$3.03	$4.27	$3.65	$3.58

All USD unless noted — Year End Dec 31

PRICES & EXCHANGE RATES		2016A	2017E	2018E	2019E	2020E
Alumina price	US$/t	265	317	308	308	308
Aluminium price	US$/lb	0.73	0.86	0.86	0.86	0.86
Copper price	US$/lb	2.21	2.57	2.54	2.54	2.54
Rutile price	US$/t	813	1,050	1,100	1,100	1,100
Diamond prices	US$/ct	60	60	60	60	60
Iron Ore fines CFR China (62%)	US$/dmt	58.33	67.01	60.80	60.80	60.80
Hard coking coal	US$/t	117	165	164	164	164
Semi-soft coking coal	US$/t	85	110	87	87	87
Thermal coal	US$/t	60	75	73	73	73
Uranium price	US$/lb	40.12	27.75	27.00	27.00	27.00
AUDUSD		0.74	0.75	0.74	0.74	0.74
CADUSD		0.76	0.74	0.73	0.73	0.73

PRODUCTION		2016A	2017E	2018E	2019E
Iron ore (Pilbara)	Mt	329	333	345	349
Iron ore (attrib)	Mt	289	297	307	310
Aluminium	kt	3,644	3,553	3,551	3,551
Alumina	kt	8,191	8,143	8,130	8,130
Copper	kt	542	463	511	537
Hard Coking Coal	kt	8,141	7,919	7,800	7,800
Semi-soft	kt	4,101	3,577	3,490	3,490
Thermal coal	kt	17,260	16,986	16,857	16,857
Diamonds	kct	17,952	22,610	25,730	25,684
TiO2 feedstock	kt	1,049	1,232	1,100	1,200
Borates	kt	503	483	480	480
Salt	kt	7,578	7,246	8,000	8,000
Uranium	klb	6,341	4,655	2,720	1,646

CAPEX BREAKDOWN		2016A	2017E	2018E	2019E
Iron ore	$m	868	1,377	1,415	1,107
Aluminium	$m	870	1,220	1,210	823
Copper & Diamonds	$m	1,449	1,982	2,111	2,687
Energy & Minerals	$m	137	553	540	419
Other	$m	-11	0	0	0
Product group capex	$m	**3,313**	**5,132**	**5,276**	**5,037**

SEGMENT BREAKDOWN (EBITDA)		2016A	2017E	2018E	2019E
Iron ore	$m	8,492	10,149	9,202	8,637
Aluminium	$m	2,472	4,609	4,418	4,382
Copper & Diamonds	$m	1,399	1,231	1,237	1,397
Energy & Minerals	$m	1,803	2,980	2,579	2,406
Other	$m	($92)	($103)	$0	$0
Product group EBITDA	$m	**14,074**	**18,866**	**17,435**	**16,822**

NET ASSET VALUE	WACC	$m	GBP/Sh	NAV (%)
Operating Value				
Iron ore	8.1%	$55,582	23.79	55%
Aluminium	8.1%	$23,104	9.89	23%
Copper & Diamonds	8.1%	$9,247	3.96	9%
Energy & Minerals	8.1%	$12,463	5.33	12%
Total operating assets		**$100,396**	**42.97**	
Corporate		($3,237)	-1.39	
Exploration/Evaluation		($1,056)	-0.45	
Cash		$8,201	3.51	
Debt		($18,392)	-7.87	
Total Net Asset Value		**$85,912**	**36.77**	

Source: Company reports and RBC Capital Markets estimates

Exhibit 20: BHP financial model

BHP Billiton Plc	LSE: BLT		**Price Target:**	1525p	**Rating:**	**Sector Perform**
RBC Capital Markets	No Shares (m):	5,321			Risk Specifier:	N/A
Tyler Broda +44 (0)20 7653 4866	Liq. ($m/day)	154	Share Price (p):	**1191p**	Implied Return (%):	28.1%
	Market Cap. ($m):	89,207	2016E Dividend ($/sh):	0.30	Implied Total Return (%):	28.1%
	Ent. Value ($m)	121,090	NAV (GBP/sh):	1470p	P/NAV (x)	0.81x

All USD unless noted					Year End Jun 30
RATIO ANALYSIS		**2016**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$0.23	$1.64	$1.71	$1.62
Earnings - Basic	$/sh	($1.20)	$1.64	$1.71	$1.62
P/E Multiple	x	67.3x	9.4x	9.0x	9.5x
EV/EBITDA	x	9.8x	5.1x	4.4x	3.8x
CFPS (Operating CF pre WC)	$/sh	$1.96	$3.45	$3.27	$3.23
P/CF Multiple	x	7.9x	4.5x	4.7x	4.8x
Free Cash Yield		3.7%	13.5%	13.2%	12.0%
Dividends Per Share	$/sh	$0.30	$0.92	$0.86	$0.81
Dividend Yield	%	2.0%	6.0%	5.6%	5.3%
Net Debt/(Cash)	$m	$26,102	$15,631	$9,087	$2,642
Net Debt/EBITDA	x	2.1x	0.7x	0.4x	0.1x
Net Debt/Total Cap	%	23%	14%	8%	2%
Interest Coverage	x	3.5x	15.1x	19.4x	19.6x
Gearing (ND/ND+Equity)	x	30%	19%	12%	3%
INCOME STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Revenue	$m	$30,912	$41,464	$43,258	$43,851
Operating Costs	$m	($28,486)	($18,841)	($20,459)	($21,635)
Operating profit	**$m**	**$2,426**	**$22,623**	**$22,799**	**$22,216**
D&A	$m	($8,661)	($7,675)	($8,177)	($8,662)
EBIT	**$m**	**($6,235)**	**$14,948**	**$14,622**	**$13,554**
Financing Income/Expenses/Other	$m	($1,024)	($972)	($731)	($668)
EBT	**$m**	**($7,259)**	**$13,976**	**$13,891**	**$12,885**
Taxes/Minorities	$m	$874	($5,233)	($4,778)	($4,282)
Net Income	**$m**	**($6,385)**	**$8,743**	**$9,113**	**$8,604**
Adjustments	$m	$7,600	($26)	$0	$0
Net Income - Adjusted	**$m**	**$1,215**	**$8,717**	**$9,113**	**$8,604**
Weighted average diluted shares	M	5,322	5,322	5,322	5,322
Underlying adj EBITDA	$m	12,340	22,331	22,357	21,775
Underlying EBIT	$m	3,635	14,656	14,181	13,113
CASH FLOW STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	($6,385)	$8,743	$9,113	$8,604
D&A	$m	$8,661	$7,675	$8,177	$8,662
Taxes Paid	$m	$1,052	($4,675)	($4,190)	($3,850)
Non Recurring/Other/Exploration	$m	$7,297	$5,066	$4,950	$3,782
Net Operating Cash Flow	**$m**	**$10,625**	**$16,809**	**$18,049**	**$17,198**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($6,946)	($4,302)	($5,274)	($5,706)
Other (excl exploration)	$m	($299)	$133	($426)	($391)
Net Investing Cash Flow (incl. stripping)	**$m**	**($7,245)**	**($4,169)**	**($5,700)**	**($6,097)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	$4,607	($1,000)	$0	$0
Dividends		($4,130)	($2,877)	($5,217)	($4,224)
Interest & Other	$m	$4,414	($1,686)	($587)	($432)
Net Financing Cash Flow	**$m**	**$284**	**($4,563)**	**($5,804)**	**($4,656)**
Increase (Decrease) in Cash	$m	$3,664	$8,077	$6,545	$6,445
Cash at End of Year	**$m**	**$10,276**	**$18,354**	**$24,898**	**$31,343**
Free Cash Flow (OPcf - Capex)	$m	$3,293	$12,030	$11,762	$10,669
BALANCE SHEET		**2016**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$10,319	$18,413	$24,957	$31,402
Other Current Assets	$m	$7,395	$10,319	$9,409	$9,984
PP&E & Mining Interests	$m	$83,975	$80,520	$77,893	$75,153
Other Long Term Assets	$m	$17,264	$16,082	$16,552	$17,037
Total Assets	**$m**	**$118,953**	**$125,333**	**$128,812**	**$133,576**
Short term debt	$m	$4,653	$3,404	$3,404	$3,404
Other Current Liabilities	$m	$7,687	$11,150	$10,882	$11,442
Long Term Debt	$m	$31,768	$30,640	$30,640	$30,640
Other Long Term Liabilities	$m	$14,774	$14,441	$14,441	$14,441
Total Liabilities	**$m**	**$58,882**	**$59,635**	**$59,367**	**$59,927**
Shareholder Equity	$m	$60,071	$65,698	$69,444	$73,649
Total Liabilities & Shareholder Equity	**$m**	**$118,953**	**$125,333**	**$128,812**	**$133,576**
FINANCIAL RATIOS		**2016**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	(10.6%)	13.3%	13.1%	11.7%
Return on Capital (ROIC)	%	(5.4%)	7.0%	7.1%	6.4%
CFPS (Operating CF pre WC)	$/sh	$1.96	$3.45	$3.27	$3.23
FCFPS (Operating CF-Capex)	$/sh	$0.70	$2.32	$2.40	$2.16

All USD unless noted						Year End Jun 30
PRICES & EXCHANGE RATES		**2016**	**2017E**	**2018E**	**2019E**	**2020E**
Copper price	US$/lb	2.22	2.55	2.67	2.80	3.17
Zinc Price	US$/lb	0.80	1.20	1.36	1.38	1.25
Nickel Price	US$/lb	4.23	4.82	5.29	5.75	7.97
Gold Price	US$/oz	1,168	1,269	1,300	1,300	1,300
Iron Ore fines CFR China (62%)	US$/dmt	51.28	78.81	70.00	67.50	64.79
Pellet premium	US$/t	30.54	40.54	40.00	37.50	33.14
Hard coking coal	US$/t	86.75	164.88	162.50	135.00	119.62
Thermal coal	US$/t	59.85	81.08	75.00	72.50	64.79
WTI	US$/bbl	41.86	48.72	57.70	65.55	75.00
Natural Gas (Henry Hub)	US$/mbtu	2.23	3.14	3.24	3.25	3.50
GBPUSD		1.30	1.30	1.30	1.30	1.30

PRODUCTION		**2016**	**2017E**	**2018E**	**2019E**
Copper	kt	1,164	987	1,163	1,163
Zinc	kt	55	80	99	101
Nickel	kt	63	68	0	0
Gold	koz	227	205	233	246
Total (Cu eq. excl Ni)	**mt**	**1,238**	**1,071**	**1,265**	**1,265**
Iron Ore (attrib)	mt	222	231	240	254
Pellets	mt	5.4	0.0	0.0	0.0
Total	**mt**	**227.0**	**230.7**	**240.0**	**254.0**
Thermal Coal	mt	34.2	29.0	32.2	32.2
Met Coal	mt	42.8	40.8	45.2	45.5
Total	**mt**	**77.1**	**69.7**	**77.4**	**77.7**
Crude oil and condensate	mmboe	91	77	76	80
Natural gas	bcf	745	662	690	726
NGL	mmboe	25	20	21	24
Total	**mmboe**	240	208	212	224

CAPEX BREAKDOWN		**2016**	**2017E**	**2018E**	**2019E**
Copper	$m	1,822	1,025	979	851
WAIO	$m	1,055	916	1,176	1,204
Coal	$m	299	258	555	357
Petroleum	$m	2,517	1,515	2,285	3,110
BHP Share equity acc. Inv.	$m	271	231	268	320
Exploration	$m	765	855	916	856
Other (unallocated/group)	$m	90	96	8	9
Total	**$m**	**6,819**	**4,896**	**6,188**	**6,707**

SEGMENT BREAKDOWN (EBITDA)		**2016**	**2017E**	**2018E**	**2019E**
Copper	$m	2,619	3,540	4,578	4,384
WAIO	$m	5,599	11,225	10,233	10,065
Coal	$m	635	4,277	3,909	2,756
Petroleum	$m	3,658	4,086	4,933	5,845
Other (excl exploration)	$m	($171)	($188)	($129)	($127)
Total (pre-unallocated cost)	$m	12,340	22,940	23,525	22,922

NET ASSET VALUE	**WACC**	**($m)**	**GBP/Sh**	**NAV (%)**
Operating Value				
WAIO	8.1%	$62,437	£9.02	48%
Copper	8.1%	$21,096	£3.05	16%
Petroleum	8.1%	$59,142	£4.26	22%
Coal	8.1%	$18,047	£2.61	14%
Other (incl Ni West)		($156)	-£0.02	0%
Total operating assets		**$160,567**	**£18.91**	
Corporate		($7,759)	-£1.12	
Exploration/Evaluation		($5,772)	-£0.83	
Less Cash		$18,413	£2.66	
Plus Debt		($34,044)	-£4.92	
Total Net Asset Value		**$131,404**	**£14.70**	

Source: Company reports and RBC Capital Markets estimates

Exhibit 21: BHP financial model at spot commodity and currencies

BHP Billiton Plc	LSE: BLT				**Rating:**	**Sector Perform**
RBC Capital Markets	No Shares (m):	5,321			Risk Specifier:	N/A
Tyler Broda +44 (0)20 7653 4866	Liq. ($m/day)	154	Share Price (p):	**1191p**		
	Market Cap. ($m):	89,207	2016E Dividend ($/sh):	0.30		
	Ent. Value ($m)	121,090	NAV (GBP/sh):	1255p	P/NAV (x)	0.95x

All USD unless noted — Year End Jun 30

RATIO ANALYSIS		**2016**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$0.23	$1.30	$1.31	$1.27
Earnings - Basic	$/sh	($1.20)	$1.30	$1.31	$1.27
P/E Multiple	x	67.3x	11.8x	11.7x	12.1x
EV/EBITDA	x	9.8x	5.8x	5.2x	4.5x
CFPS (Operating CF pre WC)	$/sh	$1.96	$3.10	$2.86	$2.87
P/CF Multiple	x	7.9x	5.0x	5.4x	5.4x
Free Cash Yield		3.7%	12.5%	10.0%	10.0%
Dividends Per Share	$/sh	$0.30	$0.75	$0.66	$0.63
Dividend Yield	%	2.0%	4.9%	4.3%	4.1%
Net Debt/(Cash)	$m	$26,102	$16,491	$11,224	$5,822
Net Debt/EBITDA	x	2.1x	0.8x	0.6x	0.3x
Net Debt/Total Cap	%	23%	14%	10%	5%
Interest Coverage	x	3.5x	12.4x	15.0x	15.2x
Gearing (ND/ND+Equity)	x	30%	21%	14%	8%
INCOME STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Revenue	$m	$30,912	$38,620	$40,152	$41,133
Operating Costs	$m	($28,486)	($18,623)	($20,370)	($21,528)
Operating profit	**$m**	**$2,426**	**$19,997**	**$19,782**	**$19,605**
D&A	$m	($8,661)	($7,675)	($8,177)	($8,662)
EBIT	**$m**	**($6,235)**	**$12,322**	**$11,606**	**$10,943**
Financing Income/Expenses/Other	$m	($1,024)	($972)	($746)	($692)
EBT	**$m**	**($7,259)**	**$11,350**	**$10,859**	**$10,251**
Taxes/Minorities	$m	$874	($4,409)	($3,870)	($3,501)
Net Income	**$m**	**($6,385)**	**$6,941**	**$6,989**	**$6,750**
Adjustments	$m	$7,600	($26)	$0	$0
Net Income - Adjusted	**$m**	**$1,215**	**$6,915**	**$6,989**	**$6,750**
Weighted average diluted shares	M	5,322	5,322	5,322	5,322
Underlying adj EBITDA	$m	12,340	19,705	19,341	19,164
Underlying EBIT	$m	3,635	12,030	11,164	10,502
CASH FLOW STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	($6,385)	$6,941	$6,989	$6,750
D&A	$m	$8,661	$7,675	$8,177	$8,662
Taxes Paid	$m	$1,052	($3,904)	($3,346)	($3,164)
Non Recurring/Other/Exploration	$m	$7,297	$5,185	$3,283	$3,077
Net Operating Cash Flow	**$m**	**$10,625**	**$15,897**	**$15,103**	**$15,325**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($6,946)	($4,302)	($5,274)	($5,706)
Other (excl exploration)	$m	($299)	$133	($426)	($391)
Net Investing Cash Flow (incl. stripping)	**$m**	**($7,245)**	**($4,169)**	**($5,700)**	**($6,097)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	$4,607	($1,000)	$0	$0
Dividends		($4,130)	($2,877)	($3,612)	($3,488)
Interest & Other	$m	$4,414	($1,633)	($524)	($337)
Net Financing Cash Flow	**$m**	**$284**	**($4,510)**	**($4,136)**	**($3,825)**
Increase (Decrease) in Cash	$m	$3,664	$7,217	$5,266	$5,402
Cash at End of Year	**$m**	**$10,276**	**$17,494**	**$22,761**	**$28,163**
Free Cash Flow (OPcf - Capex)	$m	$3,293	$11,170	$8,878	$8,890
BALANCE SHEET		**2016**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$10,319	$17,553	$22,820	$28,222
Other Current Assets	$m	$7,395	$9,045	$9,236	$9,660
PP&E & Mining Interests	$m	$83,975	$80,520	$77,893	$75,153
Other Long Term Assets	$m	$17,264	$16,077	$16,565	$17,063
Total Assets	**$m**	**$118,953**	**$123,194**	**$126,514**	**$130,098**
Short term debt	$m	$4,653	$3,404	$3,404	$3,404
Other Current Liabilities	$m	$7,687	$10,813	$10,906	$11,404
Long Term Debt	$m	$31,768	$30,640	$30,640	$30,640
Other Long Term Liabilities	$m	$14,774	$14,441	$14,441	$14,441
Total Liabilities	**$m**	**$58,882**	**$59,298**	**$59,391**	**$59,889**
Shareholder Equity	$m	$60,071	$63,896	$67,123	$70,209
Total Liabilities & Shareholder Equity	**$m**	**$118,953**	**$123,194**	**$126,514**	**$130,098**
FINANCIAL RATIOS		**2016**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	(10.6%)	10.9%	10.4%	9.6%
Return on Capital (ROIC)	%	(5.4%)	5.6%	5.5%	5.2%
CFPS (Operating CF pre WC)	$/sh	$1.96	$3.10	$2.86	$2.87
FCFPS (Operating CF-Capex)	$/sh	$0.70	$2.15	$1.85	$1.81

All USD unless noted — Year End Jun 30

PRICES & EXCHANGE RATES		**2016**	**2017E**	**2018E**	**2019E**	**2020E**
Copper price	US$/lb	2.22	2.50	2.54	2.54	2.54
Zinc Price	US$/lb	0.80	1.20	1.36	1.38	1.25
Nickel Price	US$/lb	4.23	4.60	4.19	4.19	4.19
Gold Price	US$/oz	1,168	1,269	1,300	1,300	1,300
Iron Ore fines CFR China (62%)	US$/dmt	51.28	69.01	60.80	60.80	60.80
Pellet premium	US$/t	30.54	40.54	40.00	37.50	33.14
Hard coking coal	US$/t	86.75	155.83	163.80	163.80	163.80
Thermal coal	US$/t	59.85	81.46	81.50	81.50	81.50
WTI	US$/bbl	41.86	47.76	49.18	49.18	49.18
Natural Gas (Henry Hub)	US$/mbtu	2.23	3.19	3.36	3.36	3.36
GBPUSD		1.30	1.30	1.30	1.30	1.30

PRODUCTION		**2016**	**2017E**	**2018E**	**2019E**
Copper	kt	1,164	987	1,163	1,163
Zinc	kt	55	80	99	101
Nickel	kt	63	68	0	0
Gold	koz	227	205	233	246
Total (Cu eq. excl Ni)	**mt**	**1,238**	**1,073**	**1,270**	**1,275**
Iron Ore (attrib)	mt	222	231	240	254
Pellets	mt	5.4	0.0	0.0	0.0
Total	**mt**	**227.0**	**230.7**	**240.0**	**254.0**
Thermal Coal	mt	34.2	29.0	32.2	32.2
Met Coal	mt	42.8	40.8	45.2	45.5
Total	**mt**	**77.1**	**69.7**	**77.4**	**77.7**
Crude oil and condensate	mmboe	91	77	76	80
Natural gas	bcf	745	662	690	726
NGL	mmboe	25	20	21	24
Total	**mmboe**	240	208	212	224

CAPEX BREAKDOWN		**2016**	**2017E**	**2018E**	**2019E**
Copper	$m	1,822	1,025	979	851
WAIO	$m	1,055	916	1,176	1,204
Coal	$m	299	258	555	357
Petroleum	$m	2,517	1,515	2,285	3,110
BHP Share equity acc. Inv.	$m	271	231	268	320
Exploration	$m	765	855	916	856
Other (unallocated/group)	$m	90	96	8	9
Total	**$m**	**6,819**	**4,896**	**6,188**	**6,707**

SEGMENT BREAKDOWN (EBITDA)		**2016**	**2017E**	**2018E**	**2019E**
Copper	$m	2,619	3,395	4,180	3,552
WAIO	$m	5,599	9,151	8,197	8,496
Coal	$m	635	3,962	4,005	3,977
Petroleum	$m	3,658	4,043	4,230	4,396
Other (excl exploration)	$m	($171)	($230)	($129)	($127)
Total (pre-unallocated cost)	$m	12,340	20,321	20,483	20,293

NET ASSET VALUE	**WACC**	**($m)**	**GBP/Sh**	**NAV (%)**
Operating Value				
WAIO	8.1%	$53,810	£7.78	46%
Copper	8.1%	$14,464	£2.09	12%
Petroleum	8.1%	$36,925	£2.65	16%
Coal	8.1%	$30,424	£4.40	26%
Other (incl Ni West)		($193)	-£0.03	0%
Total operating assets		**$135,430**	**£16.89**	
Corporate		($7,759)	-£1.12	
Exploration/Evaluation		($5,772)	-£0.83	
Less Cash		$17,553	£2.54	
Plus Debt		($34,044)	-£4.92	
Total Net Asset Value		**$105,408**	**£12.55**	

Source: Company reports and RBC Capital Markets estimates

Exhibit 22: Glencore financial model

Glencore plc	LSE: GLEN		Price Target:	450p	Rating: Outperform	
RBC Capital Markets	No Shares (m):	14,224			Risk Specifier:	N/A
Tyler Broda +44 207 653 4866	Liq. ($m/day)	228	Share Price (p):	294p	Implied Return (%):	53.1%
	Market Cap. ($m):	53,992	2017E Dividend ($/sh):	$0.16	Implied Total Return (%):	53.1%
	Ent. Value (M $)	67,147	NAV (GBP/sh):	411p	P/NAV (x)	0.71x

All USD unless noted					Year End Dec 31
RATIO ANALYSIS		**2016**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$0.14	$0.40	$0.42	$0.45
Earnings - Basic	$/sh	$0.10	$0.40	$0.42	$0.45
P/E Multiple	x	26.4x	9.4x	9.1x	8.4x
EV/EBITDA	x	6.5x	4.5x	4.4x	4.2x
Cash Flow per Share (pre WC)	$/sh	$0.42	$0.73	$0.75	$0.80
P/CF Multiple	x	9.0x	5.2x	5.1x	4.7x
Free cash yield		3.9%	14.2%	15.1%	17.6%
Dividends Per Share	$/sh	$0.00	$0.16	$0.17	$0.18
Dividend Yield	%	0.0%	4.2%	4.4%	4.8%
Net Debt (Glencore reported)	$m	$15,526	$10,048	$4,816	($1,536)
Net Debt/EBITDA	x	1.5x	0.7x	0.3x	-0.1x
Net Debt/Total Cap	%	12%	8%	4%	-1%
Interest Coverage (EBITDA/Net interest)	x	6.7x	12.8x	16.6x	22.3x
Gearing (ND/ND+Equity)	x	26%	17%	9%	-3%
INCOME STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Revenue	$m	$152,948	$188,509	$208,351	$231,717
Operating Costs	$m	($142,680)	($173,502)	($193,125)	($215,860)
Adjusted EBITDA	**$m**	**$10,268**	**$15,007**	**$15,226**	**$15,857**
D&A	$m	($5,401)	($6,319)	($6,536)	($6,715)
Adjusted EBIT	**$m**	**$4,867**	**$8,688**	**$8,690**	**$9,141**
Other		($3,883)	($263)	($303)	($295)
Financing Income/Expenses	$m	($1,533)	($1,173)	($915)	($711)
EBT	**$m**	**($549)**	**$7,252**	**$7,472**	**$8,135**
Taxes/minorities	$m	$1,081	($1,450)	($1,494)	($1,627)
Net Income - Reported	**$m**	**$1,379**	**$5,802**	**$5,977**	**$6,508**
Adjustments	$m	$669	$0	$0	$0
Net Income - Adjusted	**$m**	**$2,048**	**$5,802**	**$5,977**	**$6,508**
Weighted average diluted shares	M	14,224	14,395	14,395	14,395
CASH FLOW STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Income before taxes	$m	($549)	$7,252	$7,472	$8,135
D&A	$m	$5,632	$5,521	$5,736	$5,915
Taxes Paid	$m	($584)	($1,450)	($1,494)	($1,627)
Non Recurring/Other/WC	$m	$319	($3,055)	($1,445)	($1,387)
Net Operating Cash Flow	$m	**$4,818**	**$8,268**	**$10,268**	**$11,036**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($3,048)	($3,653)	($3,542)	($2,942)
Other (incl divestments and associate income	$m	$6,660	$254	$908	$885
Net Investing Cash Flow	$m	**$3,612**	**($3,398)**	**($2,634)**	**($2,057)**
Cash Flows From Financing Activities					
Equity Issues (net of costs)	$m	($692)	$0	$0	$0
Net Drawdown/(Repayment)	$m	($7,839)	($4,000)	($4,000)	$0
Dividends	$m	$0	($2,318)	($2,402)	($2,627)
Interest & Other	$m	($98)	$0	$0	$0
Net Financing Cash Flow	$m	**($8,629)**	**($6,318)**	**($6,402)**	**($2,627)**
Increase (Decrease) in Cash	$m	($199)	($1,448)	$1,233	$6,352
Cash at End of Year	$m	**$2,518**	**$1,070**	**$2,302**	**$8,654**
Free Cash Flow (Opcf (pre wrkg cap) - Capex)	$m	$2,089	$7,670	$8,171	$9,481
BALANCE SHEET		**2016**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$2,508	$1,060	$2,292	$8,644
Other Current Assets	$m	$40,904	$47,488	$50,562	$54,363
PP&E & Mining Interests	$m	$53,826	$52,492	$50,297	$47,324
Other Long Term Assets	$m	$27,362	$27,788	$27,788	$27,788
Total Assets	$m	**$124,600**	**$128,827**	**$130,939**	**$138,120**
Short term debt	$m	$10,030	$10,030	$10,030	$10,030
Other Current Liabilities	$m	$33,337	$37,655	$40,191	$43,490
Long Term Debt	$m	$23,188	$19,188	$15,188	$15,188
Other Long Term Liabilities	$m	$13,802	$14,228	$14,228	$14,228
Total Liabilities	$m	**$80,357**	**$81,101**	**$79,637**	**$82,936**
Shareholder Equity	$m	$44,243	$47,727	$51,302	$55,183
Total Liabilities & Shareholder Equity	$m	**$124,600**	**$128,827**	**$130,939**	**$138,120**
FINANCIAL RATIOS		**2016**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	3.1%	12.2%	11.7%	11.8%
Return on Capital (ROIC)	%	1.1%	4.5%	4.6%	4.7%
FCFPS (Operating CF pre WC-Capex)	$/sh	$0.15	$0.54	$0.57	$0.67

All USD unless noted					Year End Dec 31
PRICES & EXCHANGE RATES		**2016**	**2017E**	**2018E**	**2019E**
Copper price	US$/lb	2.21	2.64	2.75	2.80
Zinc price	US$/lb	0.95	1.34	1.35	1.38
Nickel price	US$/lb	4.35	4.98	5.50	5.75
Alumina price	US$/t	265	310	300	300
Gold price	US$/oz	1,250	1,280	1,300	1,300
Silver price	US$/oz	17.11	18.81	19.25	19.25
Coking coal	US$/t	114.38	179.25	150.00	135.00
Semi-soft coking coal	US$/t	85.00	145.00	115.00	100.00
Thermal coal	US$/t	66.68	77.85	75.00	72.50
Brent	US$/bbl	45.09	57.25	63.36	69.11
PRODUCTION		**2016**	**2017E**	**2018E**	**2019E**
Copper	kt	1,426	1,374	1,574	1,715
Zinc	kt	1,094	1,166	1,323	1,433
Nickel	kt	115	124	149	156
Lead	kt	294	300	308	308
Total coal	mt	125	128	124	124
Oil	kbbls	7,511	5,600	5,400	5,400
CAPEX BREAKDOWN		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	2,707	2,811	2,932	2,328
Energy products	$m	571	704	469	469
Agricultural and other	$m	44	14	14	14
Corporate and other	$m	0	0	0	0
Product group capex	$m	**3,322**	**3,530**	**3,415**	**2,811**
Marketing EBITDA by division		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	1,586	2,278	1,978	2,050
Energy products	$m	959	880	998	1,157
Agricultural and other	$m	454	150	250	250
Corporate and other	$m	-74	-40	-40	-40
Marketing EBITDA	$m	**2,925**	**3,268**	**3,186**	**3,418**
Industrial EBITDA by division		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	6,030	7,952	8,657	9,896
Energy products	$m	1,503	4,082	3,678	2,838
Agricultural and other	$m	138	55	55	55
Corporate and other	$m	-328	-350	-350	-350
Industrial EBITDA	$m	**7,343**	**11,739**	**12,040**	**12,439**

NET ASSET VALUE	**WACC**	
Marketing	6.6%	$24,467
Industrial	8.0%	$62,345
Corporate adjustments	7.2%	($10,936)
Listed assets		$1,078
NAV (US$)		$76,953
NAV (£/sh)		**4.11**

Source: Company reports and RBC Capital Markets estimates

Exhibit 23: Glencore financial model at spot commodity and currencies

Glencore plc	LSE: GLEN				Rating: Outperform	
RBC Capital Markets	No Shares (m):	14,224			Risk Specifier: N/A	
Tyler Broda +44 207 653 4866	Liq. ($m/day)	228	Share Price (p):	294p		
	Market Cap. ($m):	53,992	2017E Dividend ($/sh):	$0.16		
	Ent. Value (M $)	67,147	NAV (GBP/sh):	401p	P/NAV (x)	0.73x

All USD unless noted					Year End Dec 31
RATIO ANALYSIS		**2016**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$0.14	$0.38	$0.37	$0.39
Earnings - Basic	$/sh	$0.10	$0.38	$0.37	$0.39
P/E Multiple	x	26.4x	10.1x	10.4x	9.7x
EV/EBITDA	x	6.5x	4.6x	4.7x	4.5x
Cash Flow per Share (pre WC)	$/sh	$0.42	$0.71	$0.71	$0.74
P/CF Multiple	x	9.0x	5.4x	5.4x	5.1x
Free cash yield		3.9%	13.5%	13.8%	15.9%
Dividends Per Share	$/sh	$0.00	$0.16	$0.16	$0.18
Dividend Yield	%	0.0%	4.1%	4.2%	4.6%
Net Debt (Glencore reported)	$m	$15,526	$11,016	$6,732	$1,594
Net Debt/EBITDA	x	1.5x	0.8x	0.5x	0.1x
Net Debt/Total Cap	%	12%	9%	5%	1%
Interest Coverage (EBITDA/Net interest)	x	6.7x	12.3x	15.4x	19.8x
Gearing (ND/ND+Equity)	x	26%	19%	12%	3%
INCOME STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Revenue	$m	$152,948	$175,625	$180,533	$181,503
Operating Costs	$m	($142,680)	($161,113)	($166,184)	($166,743)
Adjusted EBITDA	**$m**	**$10,268**	**$14,512**	**$14,349**	**$14,760**
D&A	$m	($5,401)	($6,319)	($6,536)	($6,715)
Adjusted EBIT	**$m**	**$4,867**	**$8,193**	**$7,813**	**$8,045**
Other		($3,883)	($259)	($287)	($274)
Financing Income/Expenses	$m	($1,533)	($1,177)	($934)	($747)
EBT	**$m**	**($549)**	**$6,757**	**$6,593**	**$7,024**
Taxes/minorities	$m	$1,081	($1,351)	($1,319)	($1,405)
Net Income - Reported	**$m**	**$1,379**	**$5,406**	**$5,274**	**$5,619**
Adjustments	$m	$669	$0	$0	$0
Net Income - Adjusted	**$m**	**$2,048**	**$5,406**	**$5,274**	**$5,619**
Weighted average diluted shares	M	14,224	14,395	14,395	14,395
CASH FLOW STATEMENT		**2016**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Income before taxes	$m	($549)	$6,757	$6,593	$7,024
D&A	$m	$5,632	$5,521	$5,736	$5,915
Taxes Paid	$m	($584)	($1,351)	($1,319)	($1,405)
Non Recurring/Other/WC	$m	$319	($3,680)	($1,749)	($1,753)
Net Operating Cash Flow	$m	**$4,818**	**$7,247**	**$9,261**	**$9,781**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($3,048)	($3,653)	($3,542)	($2,942)
Other (incl divestments and associate incom	$m	$6,660	$243	$860	$821
Net Investing Cash Flow	$m	**$3,612**	**($3,410)**	**($2,682)**	**($2,121)**
Cash Flows From Financing Activities					
Equity Issues (net of costs)	$m	($692)	$0	$0	$0
Net Drawdown/(Repayment)	$m	($7,839)	($4,000)	($4,000)	$0
Dividends	$m	$0	($2,253)	($2,295)	($2,522)
Interest & Other	$m	($98)	$0	$0	$0
Net Financing Cash Flow	$m	**($8,629)**	**($6,253)**	**($6,295)**	**($2,522)**
Increase (Decrease) in Cash	$m	($199)	($2,416)	$284	$5,139
Cash at End of Year	$m	**$2,518**	**$102**	**$386**	**$5,524**
Free Cash Flow (Opcf (pre wrkg cap) - Capex)	$m	$2,089	$7,274	$7,468	$8,592
BALANCE SHEET		**2016**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$2,508	$92	$376	$5,514
Other Current Assets	$m	$40,904	$45,513	$46,575	$47,538
PP&E & Mining Interests	$m	$53,826	$52,492	$50,297	$47,324
Other Long Term Assets	$m	$27,362	$27,788	$27,788	$27,788
Total Assets	$m	**$124,600**	**$125,884**	**$125,036**	**$128,165**
Short term debt	$m	$10,030	$10,030	$10,030	$10,030
Other Current Liabilities	$m	$33,337	$35,042	$35,215	$35,246
Long Term Debt	$m	$23,188	$19,188	$15,188	$15,188
Other Long Term Liabilities	$m	$13,802	$14,228	$14,228	$14,228
Total Liabilities	$m	**$80,357**	**$78,488**	**$74,661**	**$74,692**
Shareholder Equity	$m	$44,243	$47,396	$50,375	$53,472
Total Liabilities & Shareholder Equity	$m	**$124,600**	**$125,884**	**$125,036**	**$128,165**
FINANCIAL RATIOS		**2016**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	3.1%	11.4%	10.5%	10.5%
Return on Capital (ROIC)	%	1.1%	4.3%	4.2%	4.4%
FCFPS (Operating CF pre WC-Capex)	$/sh	$0.15	$0.51	$0.53	$0.60

All USD unless noted					Year End Dec 31
PRICES & EXCHANGE RATES		**2016**	**2017E**	**2018E**	**2019E**
Copper price	US$/lb	2.21	2.58	2.58	2.58
Zinc price	US$/lb	0.95	1.19	1.19	1.19
Nickel price	US$/lb	4.35	4.20	4.20	4.20
Alumina price	US$/t	265	335	335	335
Gold price	US$/oz	1,250	1,271	1,271	1,271
Silver price	US$/oz	17.11	17.84	17.84	17.84
Coking coal	US$/t	114.38	257.40	257.40	257.40
Semi-soft coking coal	US$/t	85.00	95.40	95.40	95.40
Thermal coal	US$/t	66.68	79.50	79.50	79.50
Brent	US$/bbl	45.09	51.64	51.64	51.64
PRODUCTION		**2016**	**2017E**	**2018E**	**2019E**
Copper	kt	1,426	1,374	1,574	1,715
Zinc	kt	1,094	1,166	1,323	1,433
Nickel	kt	115	124	149	156
Lead	kt	294	300	308	308
Total coal	mt	125	128	124	124
Oil	kbbls	7,511	5,600	5,400	5,400
CAPEX BREAKDOWN		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	2,707	2,811	2,932	2,328
Energy products	$m	571	704	469	469
Agricultural and other	$m	44	14	14	14
Corporate and other	$m	0	0	0	0
Product group capex	$m	**3,322**	**3,530**	**3,415**	**2,811**
Marketing EBITDA by division		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	1,586	2,218	1,857	1,857
Energy products	$m	959	793	813	813
Agricultural and other	$m	454	150	250	250
Corporate and other	$m	-74	-40	-40	-40
Marketing EBITDA	$m	**2,925**	**3,121**	**2,880**	**2,880**
Industrial EBITDA by division		**2016**	**2017E**	**2018E**	**2019E**
Metals & minerals	$m	6,030	7,214	7,194	7,661
Energy products	$m	1,503	4,473	4,571	4,514
Agricultural and other	$m	138	55	55	55
Corporate and other	$m	-328	-350	-350	-350
Industrial EBITDA	$m	**7,343**	**11,391**	**11,469**	**11,880**

NET ASSET VALUE	**WACC**	
Marketing	6.6%	$20,048
Industrial	8.0%	$66,784
Corporate adjustments	7.2%	($12,853)
Listed assets		$1,078
NAV (US$)		$75,058
NAV (£/sh)		**4.01**

Source: Company reports and RBC Capital Markets estimates

Exhibit 24: Anglo American financial model

Anglo American plc	LSE: AAL		Price Target:	1800p	Rating:	Outperform
RBC Capital Markets	No Shares (m):	1,288			Risk Specifier:	N/A
Tyler Broda +44 207 653 4866	Liq. ($m/day)	72	Share Price (p):	1075p	Implied Return (%):	67.5%
	Market Cap. ($m):	17,868	2017E Dividend ($/sh):	$1.73	Implied Total Return (%):	67.7%
	Ent. Value (M $)	31,664	NAV (GBP/sh):	1908p	P/NAV (x):	0.56x

All USD unless noted		Year End Dec 31			
RATIO ANALYSIS		**2016A**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$1.72	$3.45	$2.90	$2.34
Earnings - Basic	$/sh	$1.24	$3.45	$2.90	$2.34
P/E Multiple	x	8.1x	4.0x	4.8x	5.9x
EV/EBITDA	x	5.2x	3.3x	3.1x	3.4x
CFPS (Operating CF pre WC)	$/sh	$3.89	$5.50	$5.00	$4.38
P/CF Multiple	x	3.6x	2.5x	2.8x	3.2x
Free Cash Yield	%	17.0%	28.6%	22.9%	19.1%
Dividends Per Share	$/sh	$0.00	$1.73	$1.45	$1.17
Dividend Yield	%	0.0%	12.4%	10.4%	8.4%
Net Debt	$m	$8,487	$3,305	$2,788	$994
Net Debt/EBITDA	x	1.4x	0.3x	0.3x	0.1x
Net Debt/Total Cap	%	29%	13%	11%	3%
Interest Coverage (EBITDA/Net interest)	x	20.1x	-790.7x	-371.5x	-57.8x
Gearing (ND/ND+Equity)	x	26%	10%	8%	2%
INCOME STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Revenue	$m	$21,378	$23,748	$23,433	$22,892
Operating Costs	$m	($15,909)	($15,142)	($15,614)	($16,228)
Operating profit		**$3,331**	**$6,192**	**$5,314**	**$3,975**
D&A	$m	($2,138)	($2,414)	($2,505)	($2,688)
Statutory EBIT	**$m**	**$3,959**	**$7,044**	**$6,008**	**$4,518**
Other		($262)	($332)	($284)	($237)
Financing Income/Expenses	$m	($304)	$12	$23	$125
EBT	**$m**	**$3,393**	**$6,723**	**$5,747**	**$4,405**
Taxes/minorities	$m	($1,183)	($2,278)	($2,018)	($1,393)
Net Income - before special items	**$m**	**$2,210**	**$4,445**	**$3,729**	**$3,013**
Adjustments	$m	($616)	$0	$0	$0
Net Income - after special items	**$m**	**$1,594**	**$4,445**	**$3,729**	**$3,013**
Weighted average diluted shares	M	1,289	1,288	1,288	1,288
Underlying EBITDA	**$m**	**$6,097**	**$9,457**	**$8,514**	**$7,206**
CASH FLOW STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	$2,210	$4,445	$3,729	$3,013
D&A	$m	$2,138	$2,414	$2,505	$2,688
Taxes Paid	$m	($611)	($1,776)	($1,580)	($1,177)
Non Recurring/Other/Exploration	$m	$1,662	$1,990	$1,727	$1,151
Net Operating Cash Flow	$m	**$5,399**	**$7,072**	**$6,381**	**$5,675**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($2,418)	($2,268)	($2,312)	($2,283)
Other investment income	$m	$1,893	$464	$350	$451
Net Investing Cash Flow (incl. stripping)	$m	**($525)**	**($1,805)**	**($1,962)**	**($1,831)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	($4,519)	($5,000)	$0	$0
Dividends	$m	$0	$0	($3,163)	($1,682)
Interest, Equity Raise & Other	$m	($1,261)	($602)	($649)	($754)
Net Financing Cash Flow	$m	**($5,780)**	**($5,602)**	**($3,812)**	**($2,437)**
Increase (Decrease) in Cash	$m	($906)	($334)	$607	$1,407
Cash at End of Year	$m	**$6,044**	**$5,710**	**$6,317**	**$7,724**
Free Cash Flow (OPcf - Capex)	$m	$3,043	$5,118	$4,097	$3,416
BALANCE SHEET		**2016A**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$6,051	$5,364	$5,856	$7,475
Other Current Assets	$m	$6,398	$5,903	$6,089	$6,151
PP&E & Mining Interests	$m	$28,719	$28,574	$28,380	$27,975
Other Long Term Assets	$m	$8,981	$9,240	$9,446	$9,598
Total Assets	$m	**$50,149**	**$49,081**	**$49,771**	**$51,199**
Short term debt	$m	$1,806	$1,225	$1,225	$1,225
Other Current Liabilities	$m	$4,719	$4,206	$4,330	$4,427
Long Term Debt	$m	$11,363	$6,944	$6,944	$6,944
Other Long Term Liabilities	$m	$7,936	$7,936	$7,936	$7,936
Total Liabilities	$m	**$25,824**	**$20,311**	**$20,435**	**$20,532**
Shareholder Equity	$m	$24,325	$28,770	$29,336	$30,667
Total Liabilities & Shareholder Equity	$m	**$50,149**	**$49,081**	**$49,771**	**$51,199**
FINANCIAL RATIOS		**2016A**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	9.1%	15.4%	12.7%	9.8%
Return on Capital (ROIC)	%	4.4%	9.1%	7.5%	5.9%
CFPS (Operating CF pre WC)	$/sh	$3.89	$5.50	$5.00	$4.38
FCFPS (Operating CF-Capex)	$/sh	$2.31	$3.73	$3.16	$2.63

All USD unless noted						Year End Dec 31
PRICES & EXCHANGE RATES		**2016A**	**2017E**	**2018E**	**2019E**	**2020E**
Copper price	US$/lb	2.21	2.64	2.75	2.85	3.25
Nickel price	US$/lb	4.35	4.98	5.50	6.00	7.20
Platinum	US$/oz	987	1033	1150	1200	1200
Iron Ore fines CFR China (62%)	US$/dmt	58.33	83.91	65.00	70.00	65.00
Hard coking coal	US$/t	114	179	150	120	108
Thermal coal	US$/t	67	78	75	70	59
USDAUD		0.74	0.74	0.73	0.73	0.74
USDCAD		0.76	0.73	0.74	0.75	0.78
ZARUSD		14.70	13.13	12.82	12.62	12.41

PRODUCTION		**2016A**	**2017E**	**2018E**	**2019E**
Copper	kt	554	538	598	483
Nickel	kt	45	42	43	43
Platinum	koz	2,335	2,342	2,342	2,342
Iron ore (attrib)	Mt	58	59	64	71
Diamonds	kct	27,339	30,731	31,108	31,108
Metallurgical Coal	kt	20,979	20,592	24,200	24,200
Thermal coal	kt	77,036	58,599	58,681	58,681

CAPEX BREAKDOWN		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	269	336	366	292
Nickel	$m	62	80	80	80
Copper	$m	563	496	472	458
Coal	$m	613	509	578	486
Platinum	$m	253	297	295	300
De Beers	$m	526	511	481	627
Other operations	$m	26	40	40	40
Product group net capex	**$m**	**2,312**	**2,268**	**2,312**	**2,283**

SEGMENT BREAKDOWN (EBITDA)		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	1,540	2,495	1,464	1,584
Nickel	$m	54	79	143	183
Copper	$m	910	1,338	1,775	1,220
Coal	$m	1,660	3,634	3,214	2,278
Platinum	$m	532	469	718	760
De Beers	$m	1,406	1,608	1,366	1,346
Other operations	$m	118	0	0	0
Product group EBITDA	$m	**6,220**	**9,623**	**8,680**	**7,372**

NET ASSET VALUE	**WACC**	**US$m**	**GBP/Sh**	**NAV (%)**
Operating Value				
Iron ore	8.1%	$6,853	4.09	17%
Nickel	8.1%	$1,379	0.82	3%
Copper	8.1%	$5,642	3.37	14%
Coal	8.1%	$12,392	7.40	31%
Platinum	8.1%	$5,235	3.13	13%
De Beers	8.1%	$9,045	5.40	22%
Total operating assets		**$40,545**	**24.21**	100%
Corporate		($480)	-0.29	
Exploration/Evaluation		($700)	-0.42	
Cash		$5,745	3.43	
Debt		($13,169)	-7.86	
Total Net Asset Value		**$31,941**	**19.08**	

Source: Company reports and RBC Capital Markets estimates

Exhibit 25: Anglo American financial model at spot commodity and currencies

Anglo American plc	LSE: AAL				**Rating:**	**Outperform**
RBC Capital Markets	No Shares (m):	1,288			Risk Specifier:	N/A
Tyler Broda +44 207 653 4866	Liq. ($m/day)	72	Share Price (p):	**1075p**		
	Market Cap. ($m):	17,868	2017E Dividend ($/sh):	$1.43		
	Ent. Value (M $)	31,664	NAV (GBP/sh):	2140p	P/NAV (x):	0.50x

All USD unless noted — Year End Dec 31

RATIO ANALYSIS		**2016A**	**2017E**	**2018E**	**2019E**
Earnings - Adjusted	$/sh	$1.72	$2.86	$2.82	$2.54
Earnings - Basic	$/sh	$1.24	$2.86	$2.82	$2.54
P/E Multiple	x	8.1x	4.8x	4.9x	5.5x
EV/EBITDA	x	5.2x	3.9x	3.2x	3.3x
CFPS (Operating CF pre WC)	$/sh	$3.89	$4.78	$4.89	$4.45
P/CF Multiple	x	3.6x	2.9x	2.8x	3.1x
Free Cash Yield	%	17.0%	23.8%	22.5%	20.4%
Dividends Per Share	$/sh	$0.00	$1.43	$1.41	$1.27
Dividend Yield	%	0.0%	10.3%	10.2%	9.2%
Net Debt	$m	$8,487	$3,961	$3,167	$1,209 #
Net Debt/EBITDA	x	1.4x	0.5x	0.4x	0.2x
Net Debt/Total Cap	%	29%	15%	12%	4%
Interest Coverage (EBITDA/Net interest)	x	20.1x	-4081.0x	973.7x	-74.9x
Gearing (ND/ND+Equity)	x	26%	12%	9%	3%
INCOME STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Revenue	$m	$21,378	$22,479	$23,253	$22,987
Operating Costs	$m	($15,909)	($15,120)	($15,608)	($16,163)
Operating profit		**$3,331**	**$4,922**	**$5,106**	**$4,097**
D&A	$m	($2,138)	($2,437)	($2,540)	($2,727)
Statutory EBIT	**$m**	**$3,959**	**$5,759**	**$5,901**	**$4,880**
Other		($262)	($329)	($316)	($313)
Financing Income/Expenses	$m	($304)	$2	($9)	$102
EBT	**$m**	**$3,393**	**$5,432**	**$5,576**	**$4,669**
Taxes/minorities	$m	($1,183)	($1,745)	($1,944)	($1,397)
Net Income - before special items	**$m**	**$2,210**	**$3,687**	**$3,632**	**$3,272**
Adjustments	$m	($616)	$0	$0	$0
Net Income - after special items	**$m**	**$1,594**	**$3,687**	**$3,632**	**$3,272**
Weighted average diluted shares	M	1,289	1,288	1,288	1,288
Underlying EBITDA	**$m**	**$6,097**	**$8,196**	**$8,440**	**$7,607**
CASH FLOW STATEMENT		**2016A**	**2017E**	**2018E**	**2019E**
Cash Flows from Operating Activities					
Net Income	$m	$2,210	$3,687	$3,632	$3,272
D&A	$m	$2,138	$2,437	$2,540	$2,727
Taxes Paid	$m	($611)	($1,456)	($1,589)	($1,333)
Non Recurring/Other/Exploration	$m	$1,662	$1,535	$1,602	$1,069
Net Operating Cash Flow	$m	**$5,399**	**$6,204**	**$6,185**	**$5,735**
Cash Flows From Investing Activities					
Capital Expenditure	$m	($2,418)	($2,260)	($2,296)	($2,270)
Other investment income	$m	$1,893	$454	$318	$428
Net Investing Cash Flow (incl. stripping)	$m	**($525)**	**($1,806)**	**($1,978)**	**($1,841)**
Cash Flows From Financing Activities					
Net Drawdown/(Repayment)	$m	($4,519)	($5,000)	$0	$0
Dividends	$m	$0	$0	($2,756)	($1,719)
Interest, Equity Raise & Other	$m	($1,261)	($602)	($518)	($570)
Net Financing Cash Flow	$m	**($5,780)**	**($5,602)**	**($3,274)**	**($2,290)**
Increase (Decrease) in Cash	$m	($906)	($1,204)	$933	$1,604
Cash at End of Year	$m	**$6,044**	**$4,840**	**$5,773**	**$7,377**
Free Cash Flow (OPcf - Capex)	$m	$3,043	$4,248	$4,015	$3,650
BALANCE SHEET		**2016A**	**2017E**	**2018E**	**2019E**
Cash & Equivalents	$m	$6,051	$4,708	$5,477	$7,260
Other Current Assets	$m	$6,398	$5,842	$6,072	$6,150
PP&E & Mining Interests	$m	$28,719	$28,541	$28,298	$27,841
Other Long Term Assets	$m	$8,981	$9,235	$9,474	$9,710
Total Assets	$m	**$50,149**	**$48,326**	**$49,322**	**$50,961**
Short term debt	$m	$1,806	$1,225	$1,225	$1,225
Other Current Liabilities	$m	$4,719	$4,209	$4,329	$4,415
Long Term Debt	$m	$11,363	$6,944	$6,944	$6,944
Other Long Term Liabilities	$m	$7,936	$7,936	$7,936	$7,936
Total Liabilities	$m	**$25,824**	**$20,314**	**$20,434**	**$20,520**
Shareholder Equity	$m	$24,325	$28,012	$28,888	$30,440
Total Liabilities & Shareholder Equity	$m	**$50,149**	**$48,326**	**$49,322**	**$50,961**
FINANCIAL RATIOS		**2016A**	**2017E**	**2018E**	**2019E**
Return on Equity (ROE)	%	9.1%	13.2%	12.6%	10.7%
Return on Capital (ROIC)	%	4.4%	7.6%	7.4%	6.4%
CFPS (Operating CF pre WC)	$/sh	$3.89	$4.78	$4.89	$4.45
FCFPS (Operating CF-Capex)	$/sh	$2.31	$3.06	$3.02	$2.69

All USD unless noted — Year End Dec 31

PRICES & EXCHANGE RATES		**2016A**	**2017E**	**2018E**	**2019E**	**2020E**
Copper price	US$/lb	2.21	2.57	2.54	2.54	2.54
Nickel price	US$/lb	4.35	4.29	4.16	4.16	4.16
Platinum	US$/oz	987	1145	1200	1200	1200
Iron Ore fines CFR China (62%)	US$/dmt	58.33	67.01	60.80	60.80	60.80
Hard coking coal	US$/t	114	165	164	164	164
Thermal coal	US$/t	67	81	82	82	82
USDAUD		0.74	0.75	0.74	0.74	0.74
USDCAD		0.76	0.74	0.73	0.73	0.73
ZARUSD		14.70	13.19	13.18	13.18	13.18

PRODUCTION		**2016A**	**2017E**	**2018E**	**2019E**
Copper	kt	554	538	598	483
Nickel	kt	45	42	43	43
Platinum	koz	2,335	2,342	2,342	2,342
Iron ore (attrib)	Mt	58	59	64	71
Diamonds	kct	27,339	30,731	31,108	31,108
Metallurgical Coal	kt	20,979	20,592	24,200	24,200
Thermal coal	kt	77,036	58,599	58,681	58,681

CAPEX BREAKDOWN		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	269	342	369	297
Nickel	$m	62	80	80	80
Copper	$m	563	481	454	441
Coal	$m	613	509	578	486
Platinum	$m	253	297	295	300
De Beers	$m	526	511	481	625
Other operations	$m	26	40	40	40
Product group net capex	**$m**	**2,312**	**2,260**	**2,296**	**2,270**

SEGMENT BREAKDOWN (EBITDA)		**2016A**	**2017E**	**2018E**	**2019E**
Iron ore	$m	1,540	1,562	1,322	1,167
Nickel	$m	54	-20	-36	-36
Copper	$m	910	1,307	1,578	967
Coal	$m	1,660	3,440	3,655	3,555
Platinum	$m	532	469	718	760
De Beers	$m	1,406	1,604	1,370	1,361
Other operations	$m	118	0	0	0
Product group EBITDA	$m	**6,220**	**8,362**	**8,606**	**7,773**

NET ASSET VALUE	**WACC**	**US$m**	**GBP/Sh**	**NAV (%)**
Operating Value				
Iron ore	8.1%	$4,835	2.89	11%
Nickel	8.1%	($250)	-0.15	-1%
Copper	8.1%	$4,261	2.54	10%
Coal	8.1%	$21,288	12.71	48%
Platinum	8.1%	$5,235	3.13	12%
De Beers	8.1%	$9,158	5.47	21%
Total operating assets		**$44,527**	**26.59**	100%
Corporate		($480)	-0.29	
Exploration/Evaluation		($700)	-0.42	
Cash		$5,652	3.38	
Debt		($13,169)	-7.86	
Total Net Asset Value		**$35,830**	**21.40**	

Source: Company reports and RBC Capital Markets estimates

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Ratings

Top Pick (TP): Represents analyst's best idea in the sector; expected to provide significant absolute total return over 12 months with a favorable risk-reward ratio.

Outperform (O): Expected to materially outperform sector average over 12 months.

Sector Perform (SP): Returns expected to be in line with sector average over 12 months.

Underperform (U): Returns expected to be materially below sector average over 12 months.

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As of March 31, 2013, RBC Capital Markets suspends its Average and Above Average risk ratings. The **Speculative** risk rating reflects a security's lower level of financial or operating predictability, illiquid share trading volumes, high balance sheet leverage, or limited operating history that result in a higher expectation of financial and/or stock price volatility.

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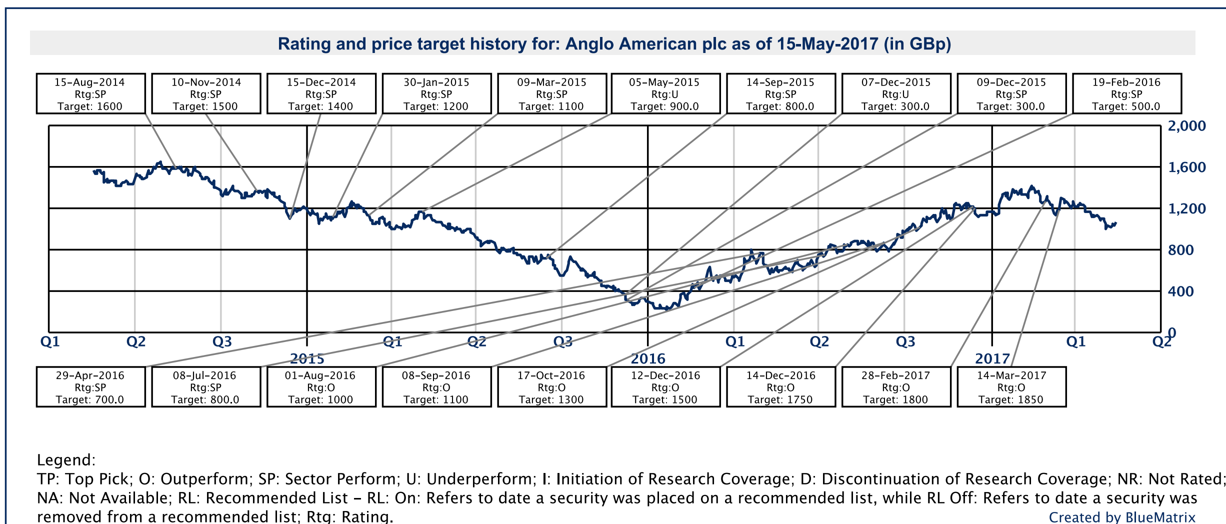
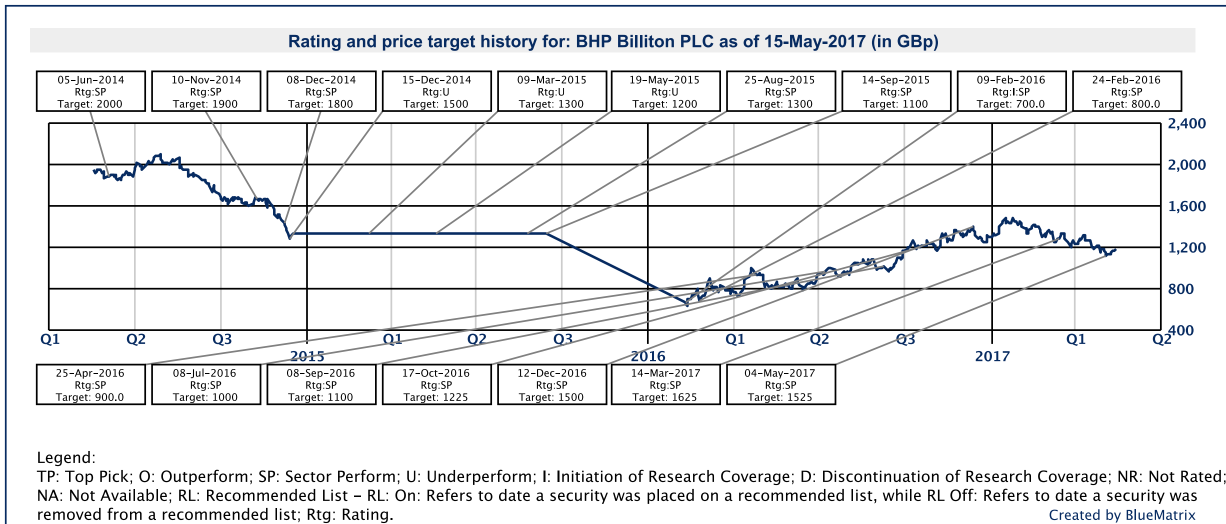
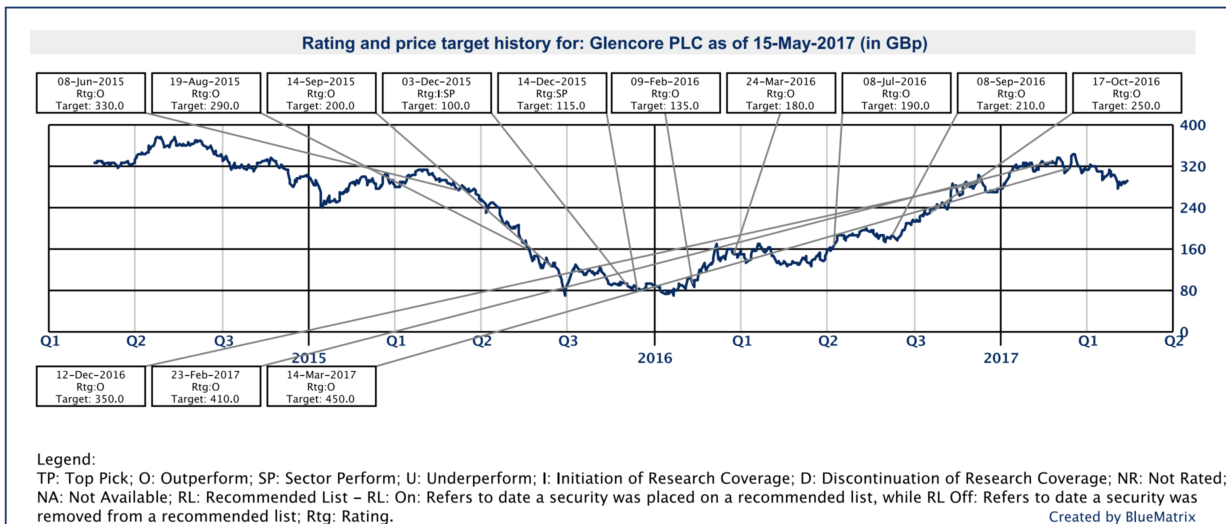
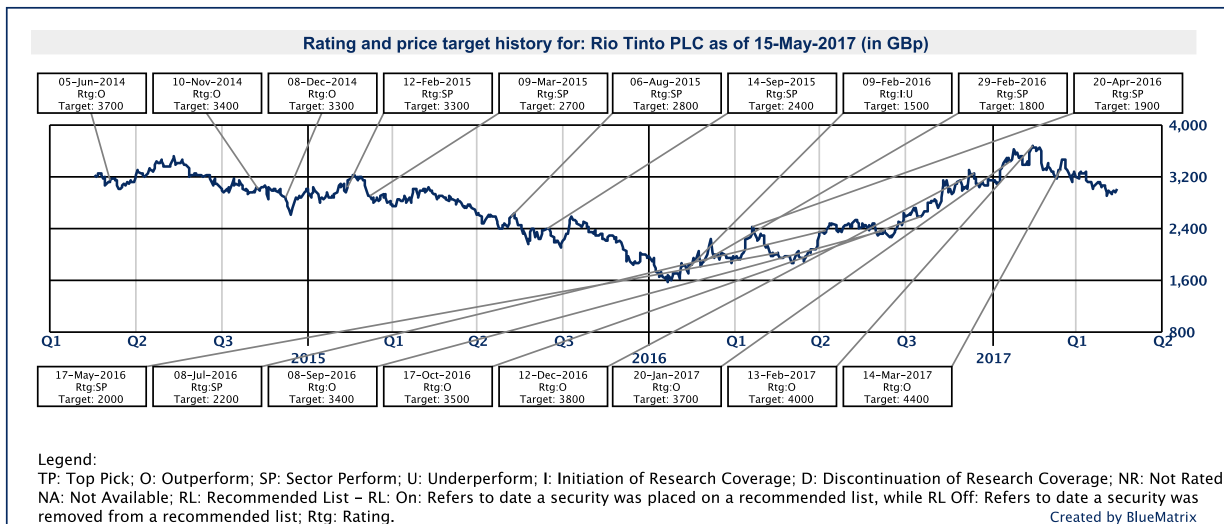
Distribution of ratings
RBC Capital Markets, Equity Research
As of 31-Mar-2017

			Investment Banking Serv./Past 12 Mos.	
Rating	**Count**	**Percent**	**Count**	**Percent**
BUY [Top Pick & Outperform]	**843**	**51.94**	**285**	**33.81**
HOLD [Sector Perform]	**679**	**41.84**	**149**	**21.94**
SELL [Underperform]	**101**	**6.22**	**8**	**7.92**




Rating and price target history for: BHP Billiton PLC as of 15-May-2017 (in GBp)
05-Jun-2014 Rtg:SP Target: 2000
10-Nov-2014 Rtg:SP Target: 1900
08-Dec-2014 Rtg:SP Target: 1800
15-Dec-2014 Rtg:U Target: 1500
09-Mar-2015 Rtg:U Target: 1300
19-May-2015 Rtg:U Target: 1200
25-Aug-2015 Rtg:SP Target: 1300
14-Sep-2015 Rtg:SP Target: 1100
09-Feb-2016 Rtg:I:SP Target: 700.0
24-Feb-2016 Rtg:SP Target: 800.0
2,400
2,000
1,600
1,200
800
400
Q1 Q2 Q3 Q1 Q2 Q3 Q1 Q2 Q3 Q1 Q2
2015
2016
2017
25-Apr-2016 Rtg:SP Target: 900.0
08-Jul-2016 Rtg:SP Target: 1000
08-Sep-2016 Rtg:SP Target: 1100
17-Oct-2016 Rtg:SP Target: 1225
12-Dec-2016 Rtg:SP Target: 1500
14-Mar-2017 Rtg:SP Target: 1625
04-May-2017 Rtg:SP Target: 1525
Legend:
TP: Top Pick; O: Outperform; SP: Sector Perform; U: Underperform; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage; NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.
Created by BlueMatrix


Rating and price target history for: Glencore PLC as of 15-May-2017 (in GBp)
08-Jun-2015 Rtg:O Target: 330.0
19-Aug-2015 Rtg:O Target: 290.0
14-Sep-2015 Rtg:O Target: 200.0
03-Dec-2015 Rtg:I:SP Target: 100.0
14-Dec-2015 Rtg:SP Target: 115.0
09-Feb-2016 Rtg:O Target: 135.0
24-Mar-2016 Rtg:O Target: 180.0
08-Jul-2016 Rtg:O Target: 190.0
08-Sep-2016 Rtg:O Target: 210.0
17-Oct-2016 Rtg:O Target: 250.0
400
320
240
160
80
0
Q1 Q2 Q3 Q1 Q2 Q3 Q1 Q2 Q3 Q1 Q2
2015
2016
2017
12-Dec-2016 Rtg:O Target: 350.0
23-Feb-2017 Rtg:O Target: 410.0
14-Mar-2017 Rtg:O Target: 450.0
Legend:
TP: Top Pick; O: Outperform; SP: Sector Perform; U: Underperform; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage; NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.
Created by BlueMatrix



References to a Recommended List in the recommendation history chart may include one or more recommended lists or model portfolios maintained by RBC Wealth Management or one of its affiliates. RBC Wealth Management recommended lists include the Guided Portfolio: Prime Income (RL 6), the Guided Portfolio: Dividend Growth (RL 8), and the Guided Portfolio: ADR (RL 10), and former lists called the Guided Portfolio: Large Cap (RL 7), the Guided Portfolio: Midcap 111 (RL 9), and the Guided Portfolio: Global Equity (U.S.) (RL 11). RBC Capital Markets recommended lists include the Strategy Focus List and the Fundamental Equity Weightings (FEW) portfolios. The abbreviation 'RL On' means the date a security was placed on a Recommended List. The abbreviation 'RL Off' means the date a security was removed from a Recommended List.

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Anglo American plc

Valuation

Our base case price target of 1800p is based on a blend of 0.9x NAV (2016E) and 5x 2017E-2018E EV/EBITDA. Our EV/EBITDA multiple of 5x reflects the geopolitical risk discount that Anglo trades at vs. peers due to South African exposure. Our P/NAV multiple of 0.9x also reflects the heightened risk of operating in South Africa. Our price target supports our Outperform rating.

Risks to rating and price target

Risks to our price target and rating include fluctuations in commodity prices, South African labour volatility, currencies in operating countries, greater-than-expected mine operating and new project construction costs, and increasing energy, material and manpower costs. In a very competitive environment, Anglo American, as with all mining companies, faces challenges finding and replacing mined reserves. South African legislative policy and the outcome or lack of outcome from any restructuring could also impact the shares.

BHP Billiton PLC

Valuation

We value BHP on a blend of 50% on 1.0x NAV and 50% on 6.0x forward 4 half EV/EBITDA, deriving our 12-month price target of 1,525p/share, which supports our Sector Perform rating. This is broadly in line with our methodology for global peers when taking into account current uncertainty around longer-term pricing and volatility.

Risks to rating and price target

The major risks to our price target and rating for BHP are commodity price and the company's exposure to Samarco rehabilitation liabilities. In particular, BHP is exposed to prices of oil and gas as well as iron ore, copper, and metallurgical coal. The value of currencies in producing countries is also a major driver to our valuation, as is political risk in countries where BHP operates.

Glencore PLC

Valuation

We value Glencore on a blend of 50% on 1.0x NAV and 50% on 6.5x forward four half EV/EBITDA, deriving our 12-month target price of 450p/share and therefore we rate the stock Outperform. This is at a slight premium to global peers of 0.5x EV/EBITDA based on lower exposure to bulk commodities and lower volatility in earnings from the marketing business. Our 450p/share target price supports our Outperform rating.

Risks to rating and price target

Commodity price and currency volatility – large changes in either overall direction or individual variance in pricing could increase or decrease our target expectations.

Operational changes – Glencore is a diversified global mining and commodity trading business and as such our price target includes hundreds of estimates for production, costs, interest expense, tax and so on. Should Glencore materially change the scope of its operations, or sell further assets, enter into a material corporate transaction amongst other general risks our price target may not be reached.

Credit rating downgrade risks – Despite recent rating upgrades, should Glencore be downgraded below investment grade, the implications around medium-term funding could see an increased risking of the equity.

Rio Tinto PLC

Valuation

Our valuation is based 50% on 6.0x EV/EBITDA projection on a forward 2-year basis and 50% on our estimates based on our long-term 1.0x NAV forecasts. This provides a 12-month target price of 4,400p per share, which supports our Top Pick rating. This is in line with our methodology for global diversified peers.

Risks to rating and price target

- **World economic growth and commodity prices** - Commodity demand is derived from world economic growth. Consequently, Rio's exposure to aluminium, iron ore, base metals, and coal in particular is vulnerable should world growth, especially China's growth, be slower than we expect.
- **Exchange rates in producing countries** - Rio operates a global portfolio of production units where local costs can be a significant percentage of the total. Thus, any material change in local US dollar exchange rates would affect costs.
- **Political relationships with producing and consumer countries** - Rio is perhaps less affected by risks related to the countries where it operates when compared with some of its peers, because it is so reliant on Australia, Canada, the US, and parts of South America.
- **Trends in operating costs** - Rio Tinto has significant exposure to energy, labour, and input costs, such as steel prices.
- **Retaining key management is imperative for all of the diversified majors**.
- **M&A -** Following the recent deleveraging stage, any material acquisition could pose a risk to our 12 month price target.

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