What Is Priced into the Major Miners?

Market optimistically expects spot prices and capital restraint to continue to underpin high returns.

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Executive Summary

We have been bearish on the resources space for a few years, and to date, our more pessimistic view has not played out. The Australian mining companies have performed very well in recent times, against our expectations. From lows in January 2016, the S&P/ASX 200 resources index has roughly doubled, as have the share prices of BHP and Rio Tinto. After plummeting 75% within two years, Fortescue's shares have subsequently tripled from 2016 lows. Based on our work on the sensitivity of our fair value estimates to commodity price changes, we estimate the market is factoring in current spot commodity prices in perpetuity, which we view as overly optimistic. Moreover, for Rio Tinto and BHP, this implies average unadjusted returns on invested capital of about 16% for our forecast period, nearly double our estimated cost of capital for those companies given their lack of moat. The market also discounts the potential for further bouts of capital misallocation. We continue to view shares as overvalued. At current share prices of about AUD 34 per share for BHP, AUD 85 for Rio Tinto, and AUD 4.70 for Fortescue, the shares trade at 48%, 77% and 27% premiums, respectively, to our fair value estimates.

Key Takeaways

- Based on the prevailing share prices, we think the market expects commodity prices close to current favourable spot levels far into the future. Taking BHP and Rio Tinto's most important commodity, iron ore, we think the market expects a price of around USD 65 per tonne long term.
- The market is pricing both BHP and Rio Tinto as if they have a moat. We think average unadjusted returns on invested capital of around 16% are required to justify the current share prices. The price/book ratio of about 2.5 for both BHP and Rio Tinto is generous given their history of capital destruction.
- Of the three firms, Rio Tinto is the most overvalued, given the company's reliance on earnings from iron ore and our expectation for prices to fall as China's demand declines and the industry cost curve flattens. Fortescue is the least overvalued of the group, a reflection of recent elevated discounts for its lower-grade iron ore. Shrinking discounts should partly offset the expected price decline for benchmark 62% grade iron ore.

Companies Mentioned

Name/Ticker	Economic Moat	Currency	Fair Value Estimate	Current Price	Uncertainty Rating	Morningstar Rating	Market Cap(Bil)
BHP Limited BHP	None	AUD	23.00	33.69	High	★★	179.35
BHP Plc BLT	None	GBX	1270.00	1768.80	High	★★	94.17
Rio Tinto Limited RIO	None	AUD	48.00	84.13	High	★	148.25
Rio Tinto Plc RIO	None	GBX	2770.00	4384.50	High	★	77.40
Fortescue FMG	None	AUD	3.70	4.58	Very High	★★	14.45

Why Have the Major Miners Performed So Well?

We have been bearish on the resources space for a few years now, and to date, our more pessimistic view has not played out. The Australian mining companies have performed very well in recent times, against our expectations. From lows in January 2016, the S&P/ASX 200 resources index has roughly doubled, as have the share prices of BHP and Rio Tinto. Fortescue's shares have been even more volatile, plummeting 75% within two years to early 2016, but subsequently tripling from those lows. Fortescue's greater financial and operating leverage—due to its relatively high cost position—mean the shares are volatile.

Our pessimistic view was based on slowing demand from China, which hasn't yet eventuated. However, we think the key reason the mined commodity prices and shares of the miners have performed so well is the rapid growth in debt in China. This has stimulated much more rapid growth in demand than we expected. In addition, the mining firms have shown admirable capital constraint despite facing favourable external conditions. Higher commodity prices and constrained expenditure has seen cash flow balloon, balance sheets formidably strengthened and returns to shareholders grow. We estimate the dividend yields for the three major Australian mining companies are 5.0% plus, fully franked. The attractive yield, and increased market optimism around the potential for the miners to grow earnings, has helped to underpin strong share price appreciation.

Why We Still Think the Major Australian Miners Are Overvalued

As Buffett's famous adage goes, "price is what you pay, value is what you get." In our opinion, the share prices of the major miners now factor in the recent favourable conditions continuing in the long term, which we view as overly optimistic. Based on our work on the sensitivity of our fair value estimates to commodity price changes, we estimate the market is factoring in current spot commodity prices in perpetuity. For Rio Tinto and BHP, this implies average unadjusted returns on invested capital, or ROIC, of about 16% for our forecast period, nearly double our estimated cost of capital for those companies.

For Fortescue, the overvaluation is less with the market pricing in ROIC of about 7% for the next five years, and for the company to earn close to its cost of capital in the long run. It is right in our view, for the market to have lower return expectations for Fortescue, given the company's significantly higher position on the cost curve. However, we still think it's optimistic to expect Fortescue to nearly earn its cost of capital, given higher operating costs and the company's assets were expensively built through the peak of the China boom.

The price/book metrics are also instructive. BHP and Rio Tinto are trading on price/book ratios of about 2.5, implying very strong returns in excess of the cost of equity in future. This compares with average price/book ratios of 1.8 and 2.0 for BHP and Rio Tinto for the five years ended June and December 2017, respectively. Fortescue also trades at a premium to its book value, albeit a modest one of about 10%, close to its average for the five years ended June 2017. Still, we think this is optimistic given the firm's cost disadvantage.

Fundamentally, we think the market is also being optimistic around future cash flow forecasts. High forecast returns are likely to incentivise new supply. The correlation between commodity prices and industry capital expenditure is strong. The market expects the relative high prices to persist while capital expenditure remains depressed. The result is an expectation for significantly more cash flow to be returned to shareholders than the past. While we agree shareholder returns are likely to take a larger than historical slice of free cash flow, it is inconsistent with history to expect expenditure to remain low.

We have detailed our macro outlook in several presentations, notably our 2017 "False Dawn: The bulk commodity mining rally will prove short-lived," as well as our April 2018 report "China's Debt, Part 1: The Consequences of Bingeing on Debt." In a nutshell, China has grown its debt much faster than GDP. The debt has been used to juice economic growth, particularly through investment in fixed assets. This has resulted in rapid consumption growth for key commodities, particularly steel and steel-making materials.

We make three key conclusions: 1) We think the rate of growth in debt is unsustainable and will slow; 2) the rate of urbanisation will slow; and 3) growth in demand for metals such as copper and aluminium is likely to slow significantly, while for steel, we think consumption will decline in future. China has rapidly matured its stocks of commodities, and at a much faster rate than developing economies in the past. At current rates of consumption, China's steel stocks will reach developed world levels within a decade, but at a much lower level of GDP per capita than predecessors.

Why Is Sensitivity Analysis Important?

While we remain bearish on the future prices for key commodities such as iron ore and metallurgical coal, commodity prices are inherently difficult to predict. We understand our view is materially more bearish than consensus and we want investors with a different view on commodity prices to be able to understand what these firms could be worth in other price scenarios. Scenario analysis also helps to illuminate the key valuation drivers and understand what is priced into the shares, while evaluating how realistic the markets assumptions are likely to be.

In exploring the sensitivities of the major miners to changes in our forecasts, it's important to understand the baseline assumptions. On average, our forecasts for the major mined commodity prices between 2018 and 2022 are about 9% below the most recent Metal Bulletin Apex consensus from April 2018. Our long-term assumptions, from 2022, are on average 15% below the Metal Bulletin Apex consensus. However, from within that average, there are meaningful discrepancies. Our long-term assumptions for iron ore, metallurgical coal, and copper are more than 30% below consensus and aluminium more than 20% lower.

Exhibit 1 Morningstar's Commodity Price Forecasts Are Materially Below Market Consensus, and Spot

			Average 2018 - 2022			2022 Forecasts		
Commodity	**April 1 Spot**	**June 11 Spot**	**Consensus**	**Morningstar**	**% Chg**	**Consensus**	**Morningstar**	**% Chg**
Aluminium (USD per tonne)	1,991	2,308	2,145	1,779	-17.1%	2,133	1,684	-21.0%
Copper (USD per tonne)	6,789	7,259	7,308	5,610	-23.2%	7,581	5,152	-32.0%
Nickel (USD per tonne)	13,277	15,223	14,005	13,996	-0.1%	15,106	14,631	-3.1%
Gold (USD per ounce)	1,323	1,299	1,331	1,302	-2.2%	1,334	1,359	1.9%
Silver (USD per ounce)	16.27	16.95	18.83	22.78	21.0%	20.50	24.71	20.5%
Iron Ore (62% CIF)	65.40	65.70	59.65	45.37	-23.9%	58.60	39.12	-33.2%
Met Coal (FOB Australia)	196.50	199.50	151.05	118.37	-21.6%	135.10	89.41	-33.8%
Iron Ore (58% CIF - FMG)	36.00	37.70	42.74	36.35	-14.9%	43.81	32.47	-25.9%
Brent Oil (futures curve)	69.02	76.49	69.88	67.96	-2.8%	64.81	60.00	-7.4%
Average					**-9.4%**			**-14.9%**

Source: Metal Bulletin Apex Survey April 2018, Morningstar Direct, Morningstar Forecasts, CME Group. Consensus forecasts as of April 2018. Oil futures from CME Group. Consensus for Fortescue ore implied from S&P/CapIQ. Copyright © 2018, S&P Global Market Intelligence.

For iron ore, we assume the price averages USD 45 per tonne to 2022 and a long-term price of USD 40 per tonne from 2023. For Fortescue's lower-grade iron ore, we assume the company realises an average price discount of 23% to 2022 and 16% long term, versus the current discount of 43% and an average for the five years ended fiscal 2017 of 21%. For metallurgical coal, we assume an average price of USD 118 per tonne to 2022 and USD 90 per tonne long term from 2023. For copper, we assume the price averages USD 2.54 per pound to 2022 and USD 2.40 per pound from 2023. For aluminium, we assume the price averages USD 0.78 per pound to 2022 and is USD 0.78 per pound long term from 2023. For Brent oil, we assume an average of USD 68 per barrel to 2022 and USD 60 per barrel long term from 2022.

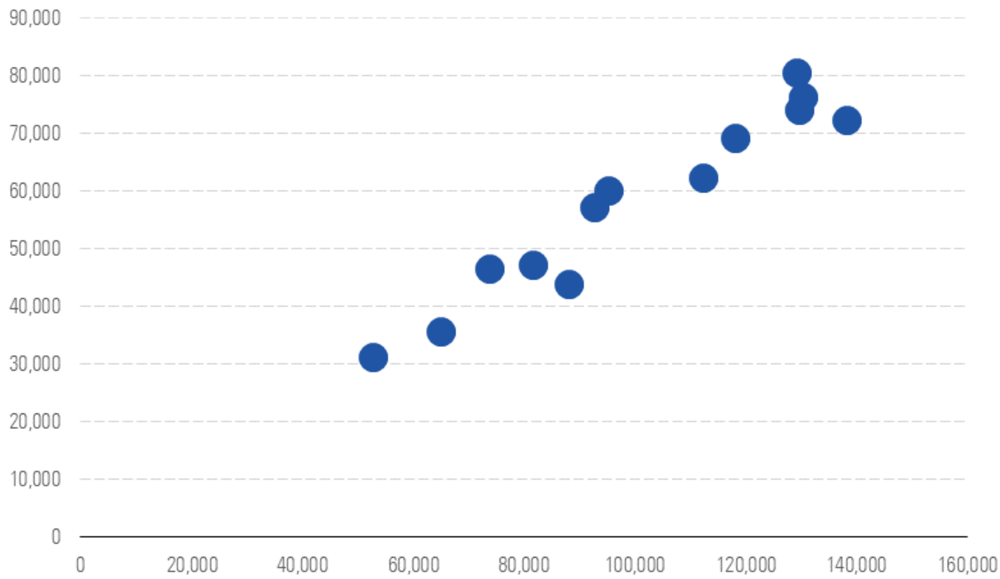
By comparison, consensus forecasts from 2018 to 2022, as per Metal Bulletin's first-quarter 2018 Apex Survey, average USD 60 per tonne for 62% iron ore, USD 150 per tonne for metallurgical coal, USD 3.30 per pound for copper, and USD 0.97 per pound for aluminium. Our forecasts on average are approximately 20% below consensus for the five-year forecast period. For the specific commodities, our forecasts are 24% below consensus for 62% iron ore, 23% for copper and 17% for aluminium.

Commodity Prices Are the Major Driver of our Fair Value Estimates.

Unsurprisingly, changes in commodity price assumptions are the key driver of our fair value estimates. For BHP and Rio Tinto, the next most important drivers are operating costs, volumes and capital expenditure. Capital expenditure is a relatively small driver, particularly given we expect levels to remain relatively low for the foreseeable future. For Fortescue, changes in operating cost assumptions is still the second most sensitive driver of our fair value estimate, however, changes to capital expenditure is of greater importance than changes in volumes. The relatively low operating margins for Fortescue versus BHP and Rio Tinto makes our Fortescue fair value estimate relatively insensitive to changes in forecast volumes.

Before exploring the sensitivity of our fair value estimates to price, we need to account for the historical relationship between revenue and costs. Looking at the revenue and operating cost history for BHP, Rio Tinto, and Fortescue since 2005, there is an approximate 2:1 relationship between revenue and operating costs. In other words, for every USD 2 increase in revenue, there has tended to be a USD 1 increase in costs. This is intuitive given many commodities are key cost inputs for the major miners, such as diesel for trucks and trains, coal for electricity for minerals processing, steel for consumables such as grinding media or rock bolts. As a simplifying assumption, when looking at the sensitivity of fair value estimates and other metrics to price, we assume for every USD 2 increase in revenue due to price, USD 1 of that benefit is lost to cost inflation, in keeping with the historical relationship.

Exhibit 2 The Unweighted Sum of Expenses for BHP, Rio Tinto, and Fortescue Is Strongly Correlated to Revenue



Source: Company Reports/Morningstar Direct.

In our scenario analysis, we've flexed the key valuation drivers in 10% increments to illuminate the sensitivities. We've flexed commodity prices up to 40% above our current estimates, which would capture a scenario broadly in line with current favourable spot prices. In an economic sense, this scenario would see continued strong and synchronised global growth and further debt-fuelled boosting of GDP growth in China. In comparison, our base case assumes China normalises its demand for commodities and becomes less of an outlier.

In the worst case, we explore a scenario where prices are 30% below our current forecasts. This would imply a substantial slowing of economic growth in China, or potential debt crisis, and a rapid normalisation of its outsize demand for commodities relative to other developing economies. It would be difficult for such a severe scenario to persist in the long term, given the mid- to low-single-digit returns implied for BHP and Rio Tinto. If returns were at these low levels, we would expect capital expenditure to be cut to the bone and a supply response would be likely.

What Are the Key Fair Value Sensitivities and What Is the Market Pricing In?

For BHP, for every 10% increase in commodity prices from baseline assumptions, our fair value estimate would rise by approximately AUD 2.90 per share. To arrive at the current share price of about AUD 34, we would need to assume commodity prices are on average 38% higher than our forecasts, broadly in line with spot and consensus, though slightly lower than the premium implied by Rio Tinto's shares, given our relative preference for oil over iron ore. BHP's London listed Plc shares also trade at about a 13% discount, equivalent to about AUD 31 per share. For our fair value estimate to match the market price would require commodity prices approximately 28% higher than our estimates.

For Rio Tinto, for every 10% increase in commodity prices from baseline assumptions, our fair value estimate would rise by approximately AUD 8.30 per share. To arrive at the current share price of AUD 84, we would need to assume commodity prices are on average 44% higher than our forecasts. Taking the company's most important commodity, iron ore, as an example, this implies the market is pricing in approximately USD 65 per tonne for iron ore in perpetuity, in line with current spot. As with BHP, Rio Tinto's U.K.-listed Plc stock trades at an approximate 13% discount, equivalent to about AUD 73 per share. To arrive at this fair value, we would need to assume commodity prices on average 30% higher than our assumptions.

For Fortescue, for every 10% increase in iron ore price forecasts from our baseline assumptions, our fair value estimate rises by approximately AUD 0.70 per share. To arrive at the current price of AUD 4.60 per share, we would need to assume Fortescue realises an iron ore price approximately 15% higher than our forecasts. This is consistent with our estimate of the difference between our iron ore price forecasts and the market consensus, as implied by Fortescue's consensus revenue estimates from S&P/CapIQ.

After price, the next most important driver of our fair value estimate for Fortescue is operating costs. This makes sense particularly given the company has high operating costs, once the discounts for producing ore below the standard 62% grade are factored in. For every 10% increase in operating costs, our fair value estimate would decline by AUD 0.40 per share, versus a AUD 0.70 per share rise for 10% higher iron ore forecasts. For capital costs, a 10% rise equates to a AUD 0.13 per share decline in our fair value estimate. Slim margins also mean our fair value estimate is relatively insensitive to changes in assumed volumes. For every 10% rise in iron ore volumes, our fair value estimate would grow by about AUD 0.10 per share. For the sensitivity of our fair value estimate to volumes, we assume revenue, cash costs, and maintenance capital expenditure increases proportionally with the change to volumes.

Exhibit 3 Relatively Slim Margins Mean Our FVE for Fortescue Is Relatively Insensitive to Volumes

Change in Variable (+/-)	-30%	-20.0%	-10.0%	0.0%	10.0%	20.0%	30.0%	40.0%
Price	1.70	2.40	3.10	3.70	4.40	5.10	5.80	6.40
Cash Costs	5.00	4.60	4.10	3.70	3.30	2.90	2.50	2.10
Capital Costs	4.00	3.90	3.80	3.70	3.60	3.50	3.30	3.10
Volumes	3.50	3.50	3.60	3.70	3.80	3.90	4.00	4.10

Source: Morningstar

Similarly, after price, the next most important variable for Rio Tinto is operating costs. For every 10% increase in operating costs, our fair value estimate would decline by AUD 5.10 per share, versus an increase of AUD 8.30 per share for 10% higher prices. Stronger margins relative to Fortescue mean the next most important fair value driver is changes to our volume assumptions. For every 10% rise in production volumes, our fair value estimate would grow by about AUD 2.80 per share. Given we expect capital expenditure to remain relatively constrained for the forecast period, the fair value estimate is relatively insensitive to changes in capital cost assumptions. For capital costs, a 10% rise equates to a AUD 0.90 per share decline in our fair value estimate.

Exhibit 4 Higher Margins Mean Volumes Are a More Important Driver of Rio Tinto's FVE than Capital Costs.

Change in Variable	-30%	-20.0%	-10.0%	0.0%	10.0%	20.0%	30.0%	40.0%
Price	23.00	31.30	39.70	48.00	56.40	64.70	73.00	81.40
Cash Costs	63.30	58.20	53.10	48.00	42.90	37.80	32.70	27.60
Volumes	39.60	42.40	45.20	48.00	50.90	53.60	56.40	59.20
Capital Costs	50.60	49.70	48.90	48.00	47.20	46.30	45.40	44.60

Source: Morningstar.

Similarly, for every 10% increase in BHP's operating costs, our fair value estimate would decline by AUD 0.70 per share, versus an increase of AUD 8.30 per share for 10% higher prices. For capital costs, a 10% rise equates to a AUD 0.90 per share decline in our fair value estimate. For every 10% rise in production volumes, our fair value estimate would grow by about AUD 2.80 per share.

Exhibit 5 Volumes Are a More Important FVE Driver than Capital Costs for BHP Too.

Change in Variable	-30%	-20.0%	-10.0%	0.0%	10.0%	20.0%	30.0%	40.0%
Price	14.40	17.30	20.10	23.00	25.90	28.80	31.70	34.60
Cash Costs	27.70	26.10	24.60	23.00	21.50	20.00	18.40	16.90
Volumes	19.50	20.70	21.80	23.00	24.30	25.40	26.60	27.80
Capital Costs	24.00	23.70	23.30	23.00	22.70	22.40	22.10	21.80

Source: Morningstar.

Why Don't BHP, Rio Tinto, and Fortescue Have Moats?

Although our valuations are sensitive to extremely cyclical inputs, we remain confident that these three companies lack economic moats. Across our global coverage of mining firms, moats are rare. There are a couple of exceptions. We rate Cameco as having a narrow moat based on its low-cost uranium production, underpinned by very-high grade ore. Another is U.S. based salt miner Compass Minerals, which benefits from mining thick seams and being favourably located close to a deep-water port which allows a location/transport cost advantage. Salt is a relatively low-value product and Compass estimates the cost of shipping by water is about half the cost of rail and one fifth the cost of trucking.

But overall, we still think it's difficult to carve out a moat in mining. The only moat source available to mining companies is cost advantage, with exceptional mineral deposits the most likely factor to underpin the cost advantage moat. With low-value products, proximity to customers can also be a contributing factor to a firm's competitive position. While BHP and Rio enjoy some operating cost advantages, it's important to also factor in capital needs through the cycle, to calculate return on invested capital and not just profit margins on the P&L. To this end, there are several key challenges we see to a cost advantage-based moat for mining companies.

First, demand, and industry returns are cyclical and excess returns in a favourable price environment may evaporate under more normal business conditions. Adjusted ROIC for the five years ended 2017 have averaged 8.3% for BHP, 6.7% for Rio Tinto, and 15.9% for Fortescue. The high returns for Fortescue reflect the company's pure exposure to what have been very favourable iron ore prices. For BHP and Rio Tinto, adding back the significant net impairments and write-downs incurred through the China boom dilutes adjusted returns. Unadjusted returns for the five years ended 2017 averaged 9.6% for BHP and 9.9% for Rio Tinto. Rio Tinto has suffered disproportionally more than BHP from past capital mistakes. While Fortescue has so far avoided any meaningful impairments, we think the lack of cost advantage and likely lower iron ore prices in future mean the company's returns will lag BHP and Rio Tinto's.

Second, industry capital expenditure tends to be strongly correlated to commodity prices, but with a lag. As an industry, miners tend to invest procyclically, when cash flow and prices are high, but in this environment, assets are generally expensive to buy or build. Capital expenditure and net acquisitions are the primary inputs to the invested capital base for mining firms, and key drivers of future returns. Investing when asset prices are high risks overpaying, which dilutes future returns and, in some cases, necessitates impairments or write-offs.

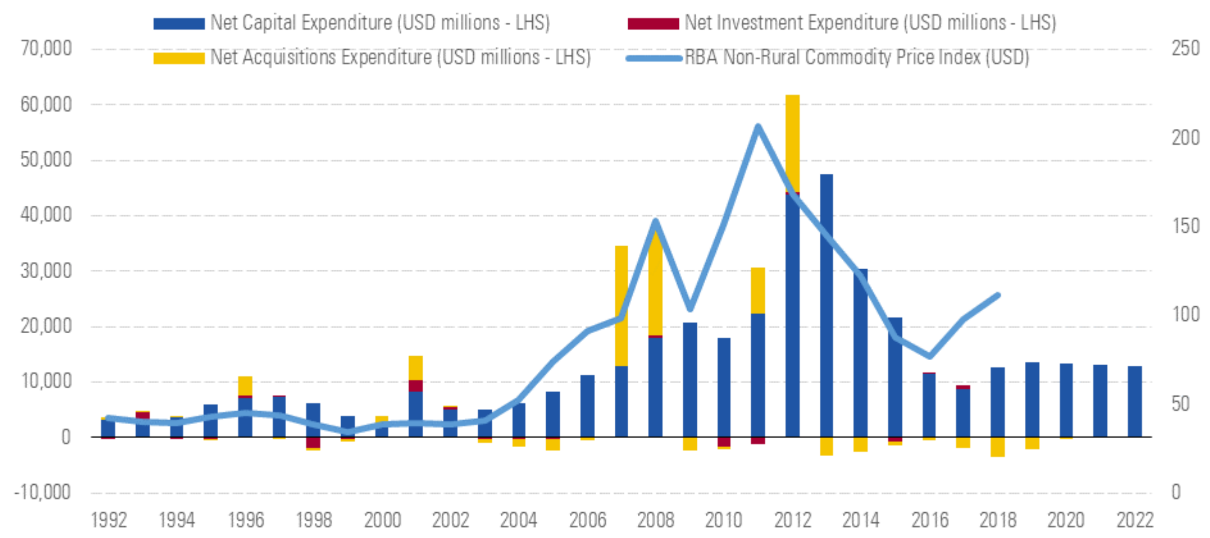
From a valuation point of view, we are assuming softer commodity prices and relatively flat capital expenditure for BHP, Rio Tinto, and Fortescue. These assumptions are consistent with history, however, should commodity prices remain high, we would expect capital expenditure to again ramp up. The market is also expecting relatively flat capital expenditure for these companies for the five-year forecast period. However, market expectations for commodity prices are substantially higher than ours and much higher than recent 2015 lows.

In our view, the market is forecasting an unrealistic optimism in its implied outlook for favourable commodity prices and restrained capital expenditure. This scenario is not in keeping with history, and anecdotally, rising commodity price optimism is restoking desires for supply growth. Mineral Resources' desire to build a 40 million tonne railway in the Pilbara, and Fortescue's attempts to either block Mineral Resources' advance, or grow themselves via an investment in Atlas Iron, exemplifies the rising ambitions and activity.

Finite resources mean there is a requirement for mining companies to continue to invest in exploration and development to find and build new mines, or to acquire them. Even if a mining company currently enjoys a cost advantage, thanks to an efficient capital base, that is, building or buying a mine cheaply, and an operating cost at least in the bottom half of the industry cost curve, maintaining that position requires reinvestment to replace finite life resources. The quality of future resources is uncertain, as are the capital and operating costs.

If conditions stay positive, the relatively low barriers to entry in mining means it will be difficult for competitors to sit idle. The industry has historically invested procyclically, when commodity prices and cash flows are high. This has been to the detriment of shareholder returns as asset prices tend to be inflated during boom times too.

Exhibit 6 Inflation Adjusted Capital Expenditure for BHP, Rio Tinto and Fortescue Is Strongly Correlated with Commodity Prices



Source: Company Reports/ Morningstar DatAnalysis/Morningstar Direct/ World Bank/Reserve Bank of Australia

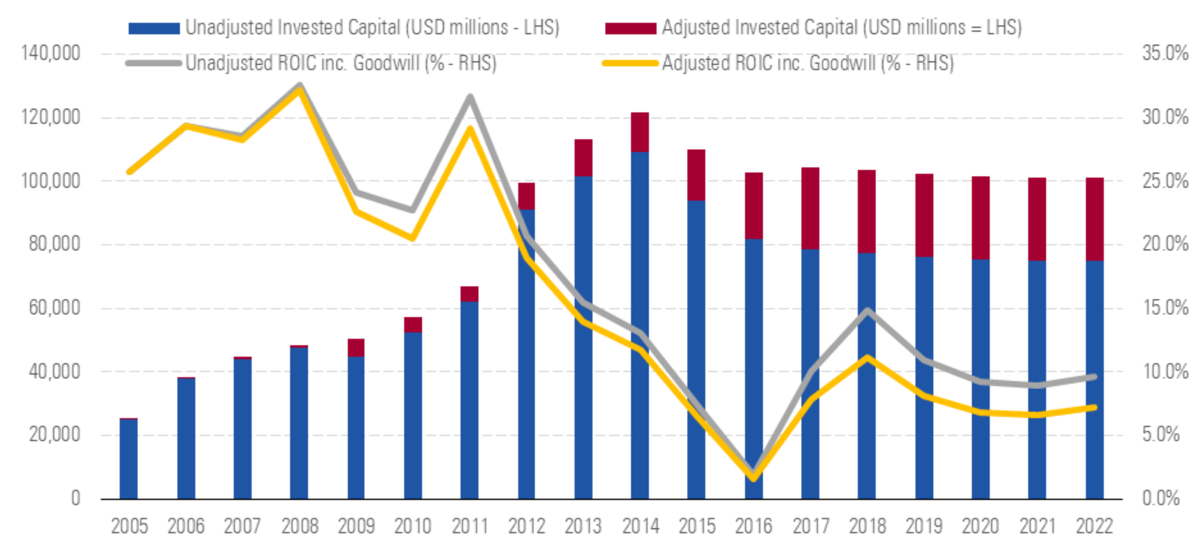
Third, cost curves can change materially. An example of this was the advent of onshore shale oil and gas in the U.S. In iron ore, we think the cost curve is likely to flatten as demand from China falls, discounts for sub-62% grade iron ore shrink, and freight rates normalise. Additional supply could also be incentivised at current favourable prices, such as from the part-Chinese-owned Simandou deposit in Africa or Mineral Resources' proposed rail line in Western Australia.

With Rio Tinto's proposed sale of its stake in Simandou to Chinalco, Simandou may come under the control of a Chinese state-owned enterprise, or SOE. We see the primary hurdle for the proposed 100 million tonne mine at Simandou as being the capital cost to build the project—estimated by Rio Tinto at USD 200 per tonne. This is higher than the China boom capital expenditure peak for new capacity in the Pilbara of around USD 100 to 150 per tonne, and the current capital cost for incremental expansions of less than USD 50 per tonne. However, with a Chinese SOE potentially comes deep pockets and the firm may see value in being able to influence supply and reduce the global marginal operation cost to produce iron ore, by developing Simandou regardless of the high capital demands. For more detail on the potential new iron ore capacity additions, see our April 2017 report, "False Dawn; The bulk commodity mining rally will prove short-lived."

In the longer term, technology, such as automated haulage, is likely to be a driver to lower industry costs. BHP, Rio Tinto, and Fortescue are all moving towards automation with equipment such as trucks, drill rigs, and trains being controlled from a central location. Rio Tinto is in the process of boosting its truck fleet automation from 20% at the end of 2017 to 30% by 2019. Rio Tinto says in 2016 its autonomous trucks operated for an additional 1000 hours on average and at an average operating cost 15% lower than conventional trucks.

The high invested capital bases of BHP and Rio Tinto, built through the China boom, are the key reasons why we do not think the businesses will generate excess ROIC on average through the cycle. For example, in June 2005, BHP's adjusted invested capital base—after adding back write-offs—was USD 25 billion. It peaked nearly five times higher at USD 122 billion in June 2014. More recently, it has declined to USD 104 billion through investment constraint and depreciation from the high base.

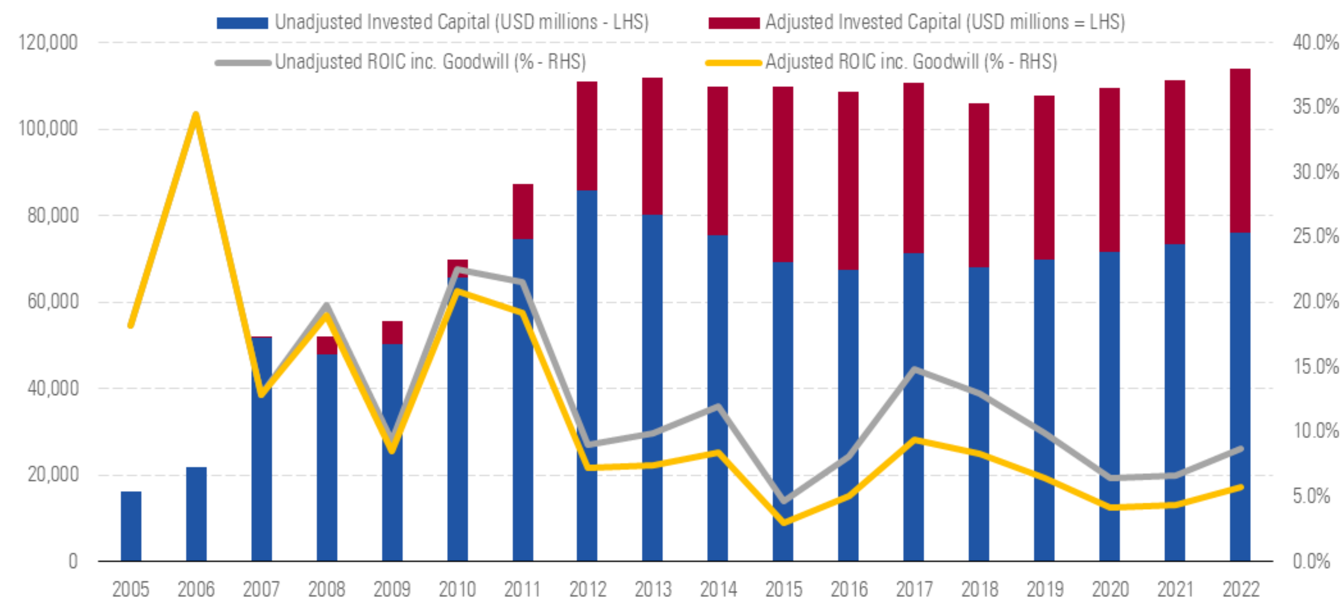
Exhibit 7 Elevated Investment Through the China Boom Has Diluted BHP's ROIC



Source: Company Reports/ Morningstar

For Rio Tinto, the historical destruction of value has been worse. Adjusted invested capital was USD 16 billion in 2005 and grew to USD 110 billion by end 2014. Like BHP, it has also subsequently started to decline, but in Rio Tinto's case, the reduction is primarily through asset disposals, rather than depreciation materially exceeding capital expenditure.

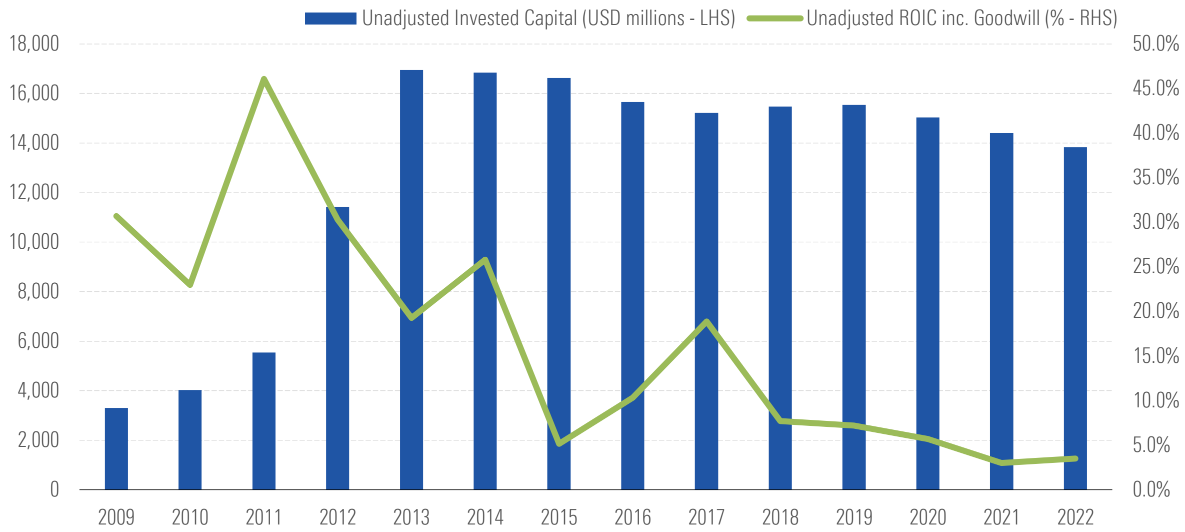
Exhibit 8 Rio Tinto's Capital Allocation Mis-steps Were Proportionally Large and Have Depressed Adjusted ROIC in Particular



Source: Company Reports/Morningstar

For Fortescue, the company built its iron ore assets from scratch through the boom, so we think they paid a relatively high price for the installed mining capacity. In addition, the company is not a low-cost producer, once product discounts are added to the company's operating costs. We estimate the company suffered an average discount of USD 18 per tonne on its iron ore sales for the five years ended June 2018.

Exhibit 9 Fortescue Has Thus Far Avoided Major Impairments, But Low Forecast Returns Reflect the Lack of Cost Advantage



Source: Company Reports/ Morningstar

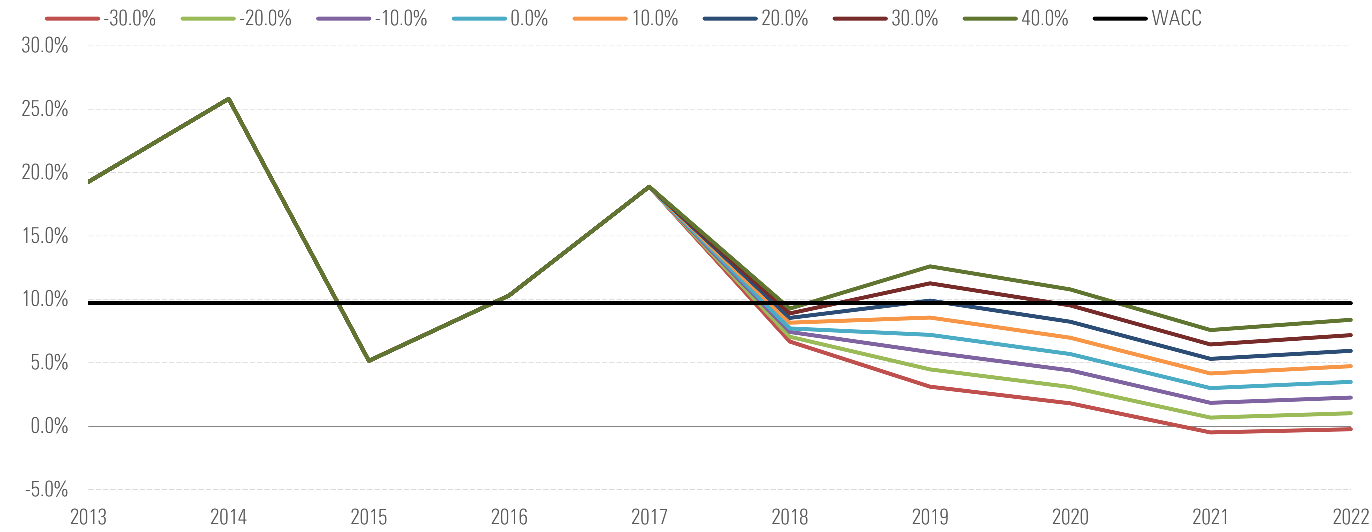
Fortescue generated extremely high rates of return in the early years of its production, a function of a very high iron ore price and the company's sole focus on earning revenue from iron ore. In the four years ended 2012, the average iron ore price exceeded USD 130 per tonne, underpinning ROIC of around 30% for Fortescue. This was despite a cost disadvantage relative to BHP and Rio Tinto.

However, in more recent times, Fortescue has struggled to earn its cost of capital. In future, we expect the company's invested capital base to continue to decline, a function of limited capital expenditure and relatively elevated depreciation reflecting the significant investment made during the boom years. But we also think the external environment is likely to be much more difficult as China transitions from an investment-driven to a consumption-driven economy. This is likely to impact demand for early stage commodities, such as iron ore, disproportionately.

What Are the Sensitivities Around Future Returns?

Both BHP and Rio Tinto are priced as if the businesses will generate excess ROIC, and that the underlying assets overall are moat-worthy. To arrive at Rio Tinto's prevailing AUD 84 share price, we would need to forecast unadjusted midcycle ROIC of about 16%. To value BHP at its AUD 34 share price would also require forecast unadjusted midcycle ROIC of about 16%. For Fortescue, the overvaluation is less. To arrive at the AUD 4.60 share price would require ROIC of about 7% for the five-year forecast period, with returns at close to the company's cost of capital thereafter.

Exhibit 10 Under No Price Scenario Do we Expect Fortescue's Unadjusted Returns on Invested Capital to Consistently Exceed 10%



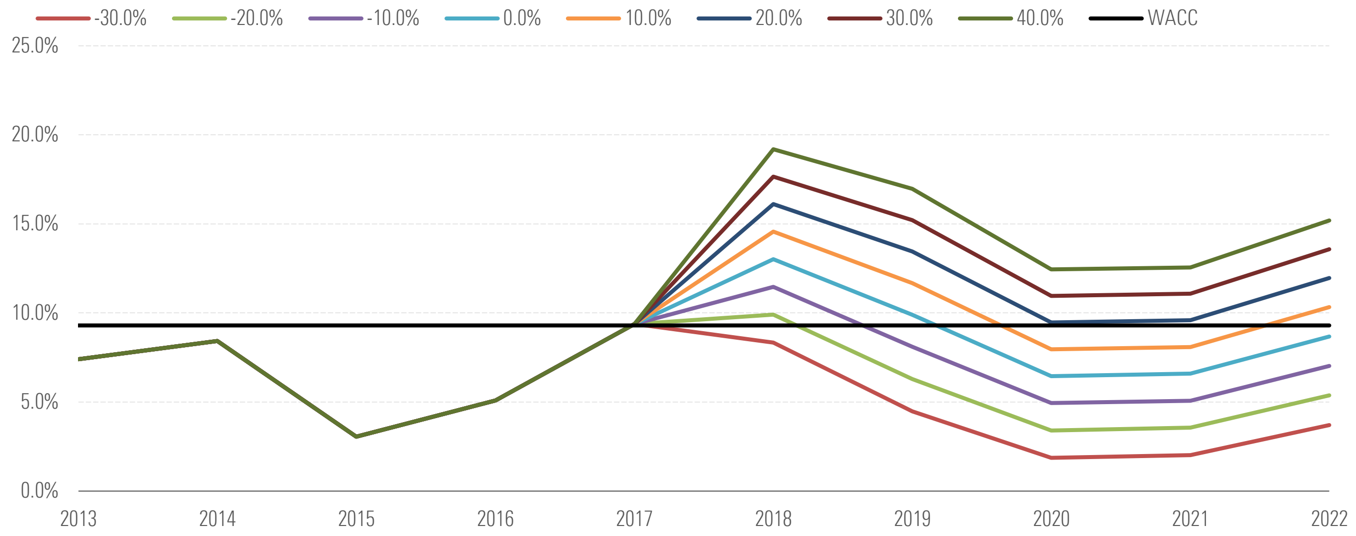
Source: Company Reports/ Morningstar

Note: these forecasts for unadjusted returns on invested capital for the various price scenarios exclude the historical net impairments and write-offs from the respective invested capital bases. This makes no difference to our estimate of Fortescue's invested capital base or forecast returns for the different price scenarios, given the company has not had any material impairments.

On our base-case commodity price forecasts, we think Rio Tinto will generate ROIC close to the company's cost of capital. We think this is reasonable given our more circumspect outlook for demand, due to the transition of China's economy from being investment-driven to consumption-driven.

For Rio Tinto, cumulative net impairments of USD 38 billion represent approximately 35% of the company's adjusted capital base. If we instead calculated forecast ROIC based on the adjusted capital base, after adding back the net impairments, our forecasts for Rio Tinto would be approximately 35% lower.

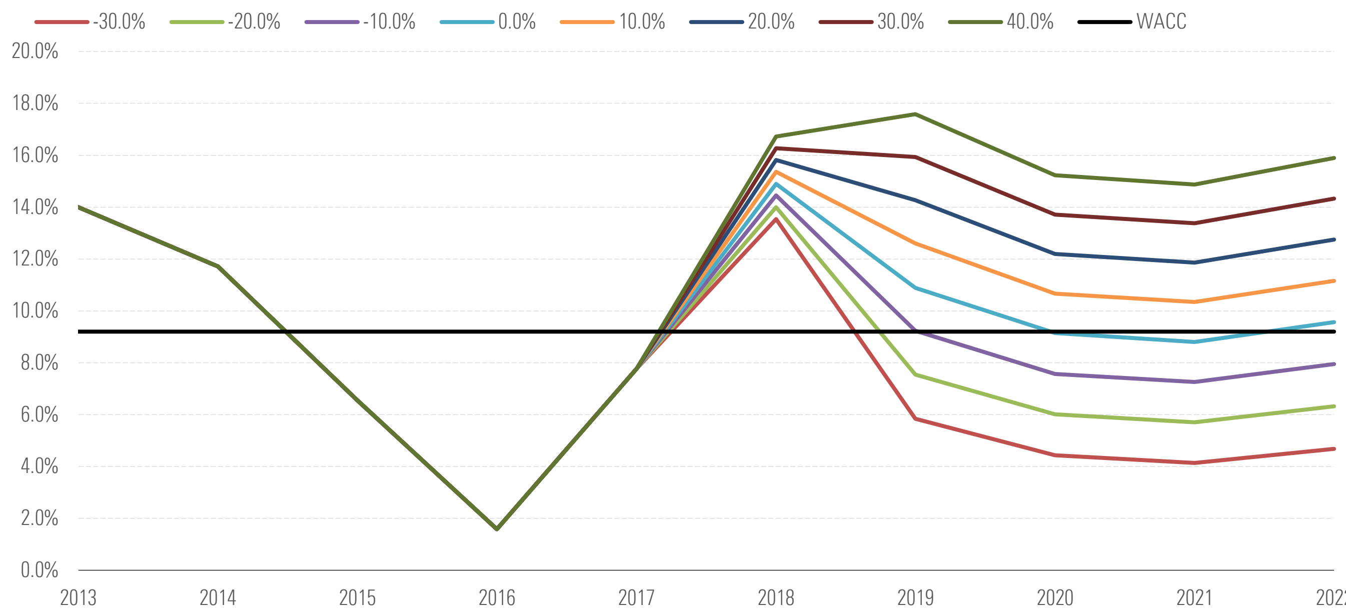
Exhibit 11 Our Base-Case Assumptions for Rio Tinto Imply Unadjusted ROIC Close to WACC



Source: Company Reports/ Morningstar

As with Rio Tinto, our base case implies BHP delivers unadjusted ROIC close to the company's cost of capital. For BHP, cumulative net impairments of about USD 26 billion represent about 26% of the adjusted capital base. If we had calculated the adjusted ROIC for BHP, including the cumulative net impairments, our forecasts would be approximately 26% lower.

Exhibit 12 Our Base-Case Assumptions for BHP Also Imply Unadjusted ROIC to WACC



Source: Company Reports/ Morningstar

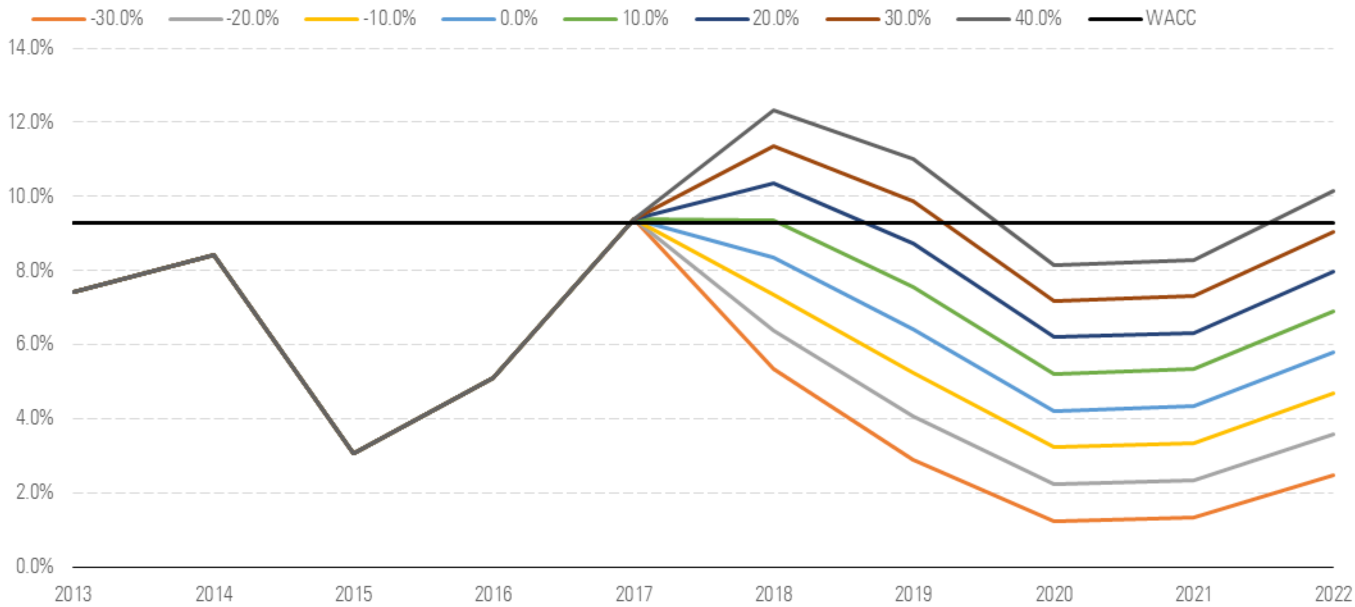
Are Adjusted or Unadjusted Returns Appropriate for Judging the Moat?

Overall, for both BHP and Rio Tinto, the money mis-spent through the China commodities boom is a driver of our no-moat rating. We think the lower adjusted ROIC forecasts are the most appropriate measure in estimating whether these firms have a moat or not. Why? Because mining firms are cyclical and capital-intensive and are likely to remain so in future. The capital allocation mistakes made in the past reflect the economic reality shareholders have faced. Those expenditures were real cash outflows which are unlikely to generate acceptable returns in future. They also reflect the challenges in deciding to build or buy new mines in an environment where prices can change materially.

It will be inconsistent with history if industry capital expenditure is no longer correlated with commodity prices. We think it's likely the major miners will maintain their capital discipline in the near to medium term, scarred from the recent experiences. However, the risk remains. In the long term, further capital allocation mis-steps will be difficult to avoid. This has been shown in history. Our valuations for BHP, Rio Tinto, and Fortescue do not include a discount for these potentially value-destructive events, but we think this is reasonable given our more circumspect commodity price forecasts imply capital expenditure will stay restrained. However, if commodity prices remain favourable, we will have underestimated operating cash flows, but it is also likely the market will have underestimated the risk of capital mis-steps in future.

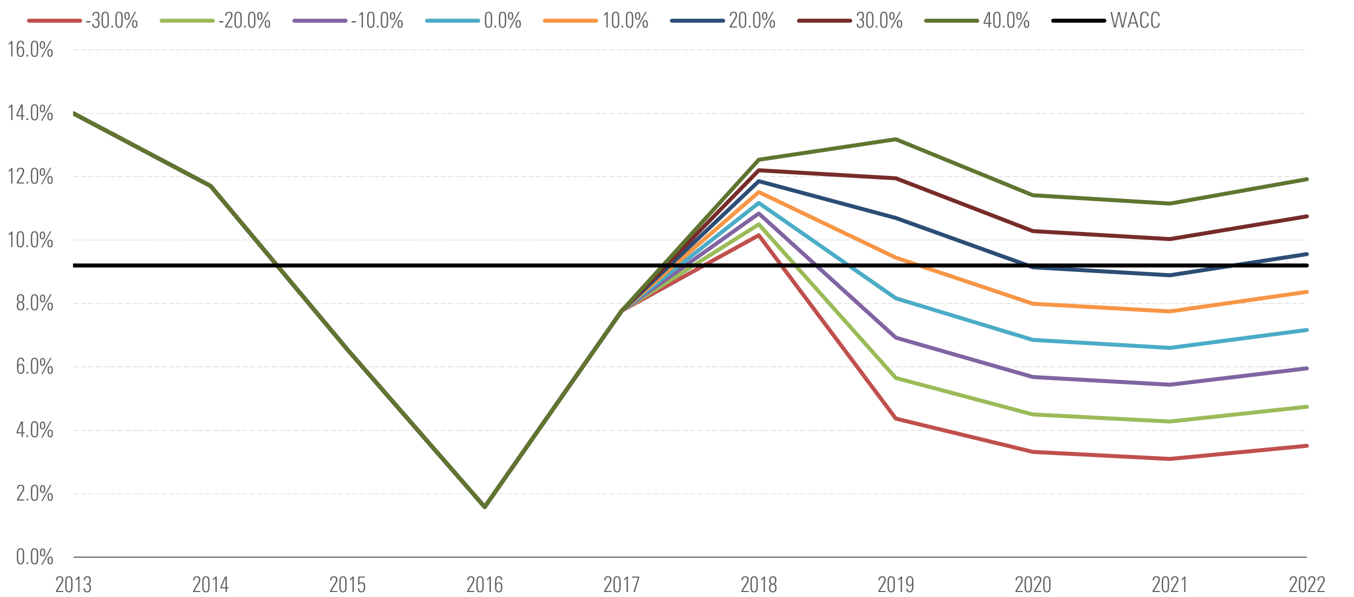
On this adjusted ROIC measure, including the dilutive impact of net impairments resulting from mis-steps during the China boom, we expect both BHP and Rio Tinto to generate returns below their cost of capital—an average of approximately 8% and 6%, respectively, for the five-year forecast period. The lower forecast returns for Rio Tinto reflect the greater proportion of procyclical investment for Rio Tinto, relative to BHP, and the larger net impairments. For Fortescue, we expect returns to average around 5%, reflecting the procyclical boom-time investment and the operating cost disadvantage, principally from mining sub-62% grade iron ore.

Exhibit 13 Depressed Adjusted ROIC Reflects the Scale of Rio Tinto's Capital Misallocation in the China Boom



Source: Company Reports/ Morningstar

Exhibit 14 BHP's Adjusted ROIC Are Also Weakened by Past Mis-steps, Though Not to the Same Degree as Rio Tinto



Source: Company Reports/ Morningstar

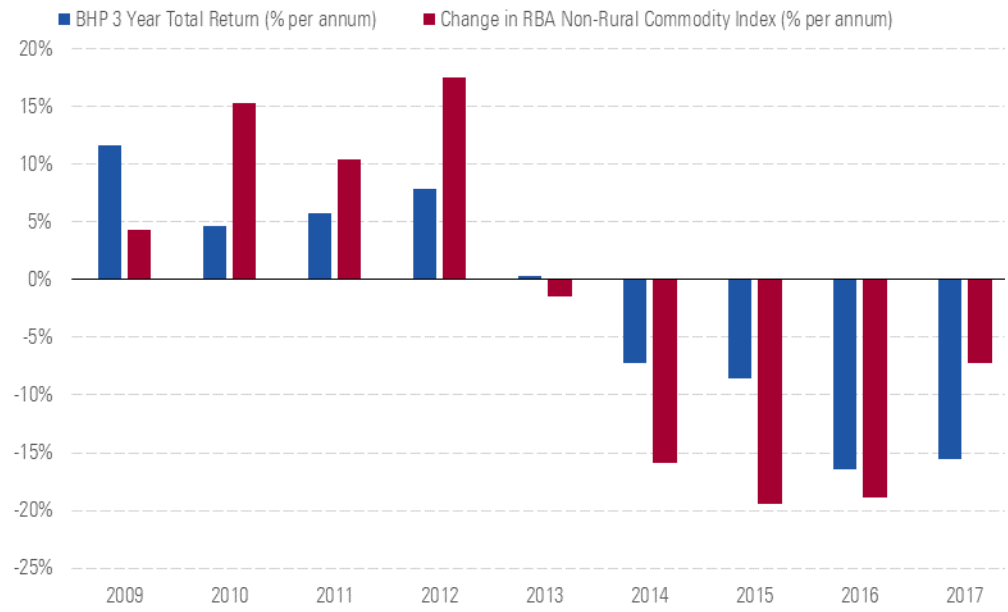
To understand the sensitivities and market expectations built into these firms' share prices, we think forecast unadjusted ROIC is the correct measure. This is because assets impaired or sold at a loss are unlikely to contribute to future earnings. On this measure, we expect Rio Tinto and BHP's returns to average 8.9% and 10.7%, respectively, for the five years ended 2022, as shown in Exhibits 11 and 12. These returns are basically in line with our forecast weighted average cost of capital of 9.3% for Rio Tinto and 9.2% for BHP.

We think forecasting returns for BHP and Rio Tinto around their cost of capital is a reasonable expectation given the relatively low barriers to entry in mining, our expectation for demand growth from China to slow, or in the case of iron ore for demand to fall in future, as the economy transitions away from investment-driven economic growth, and the outlook for cost efficiencies through the adoption of new technology such as automation. With BHP and Rio Tinto trading on price/book ratios of about 2.5, and Fortescue trading at above 1.1 despite its cost disadvantage, we think significant optimism is priced into the shares of the major Australian miners.

Rio Tinto and BHP's U.K.-Listed Shares Are Relatively Less Expensive

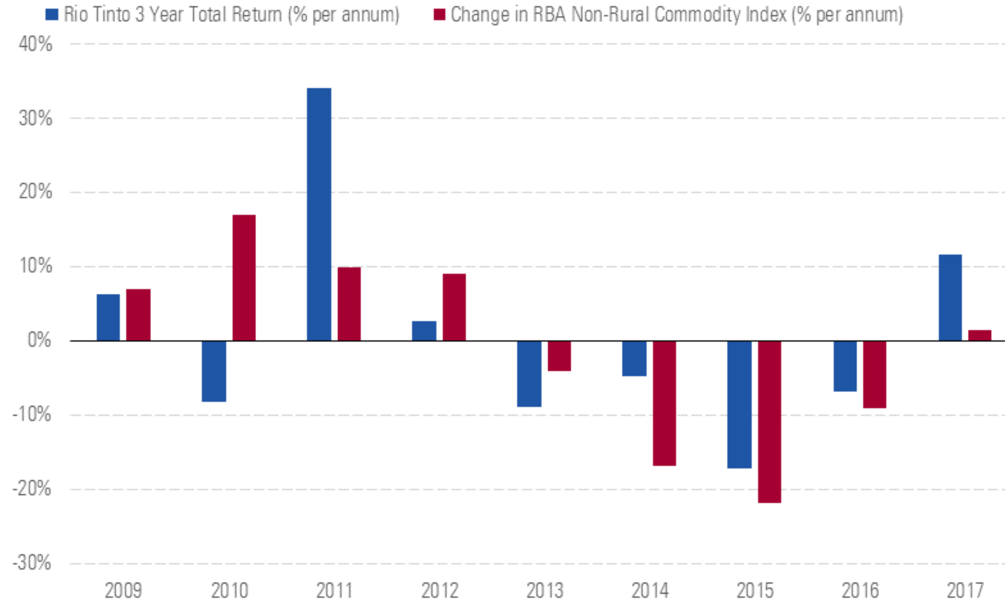
We generally see the Australian listed shares of BHP and Rio Tinto as more overvalued than their U.K listed counterparts and value both shares equally. However, lowly taxed individuals or superannuation funds may be able to justify a higher value for the Australian listed shares by considering the value of the franking credits. This value increases for investors on low tax rates if proportion of shareholder returns from dividends or share buybacks rises. With commodity prices favourable and capital expenditure plans still relatively constrained for the major miners, we think it’s reasonable to expect the majority of shareholder returns to come from dividends and share buybacks in the near- to medium-term. However, longer-term, we still think the capital appreciation component is likely to be the primary driver of returns, and that will depend on commodity prices.

Exhibit 15 BHP's Three-Year Trailing Total Shareholder Returns (% per Year) Strongly Correlate to the RBA's Non-Rural Commodity Price Index



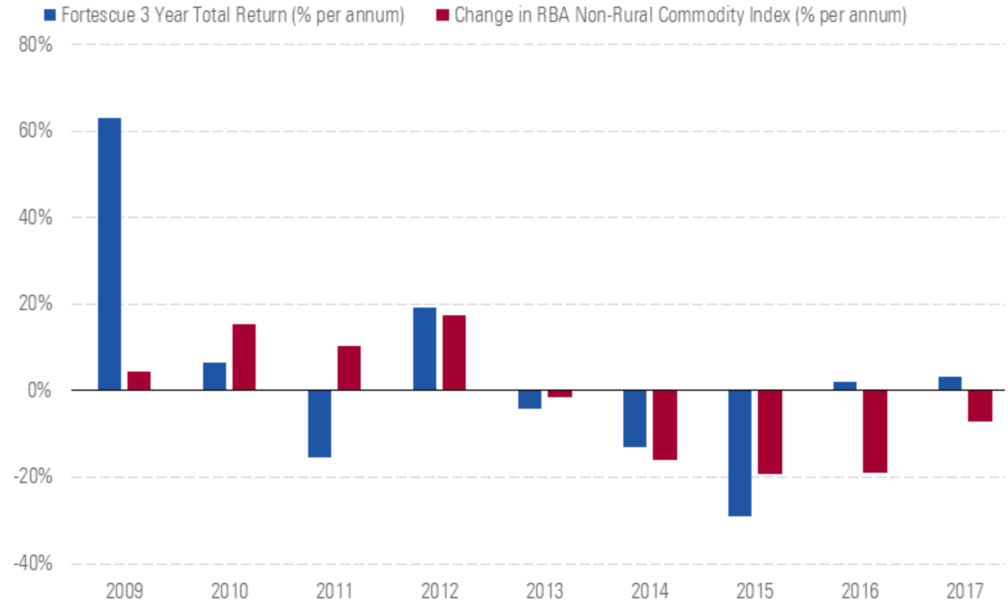
Source: Morningstar/RBA

Exhibit 16 Rio Tinto's Shareholder Returns Correlate Strongly to Commodity Prices Too



Source: Morningstar/RBA

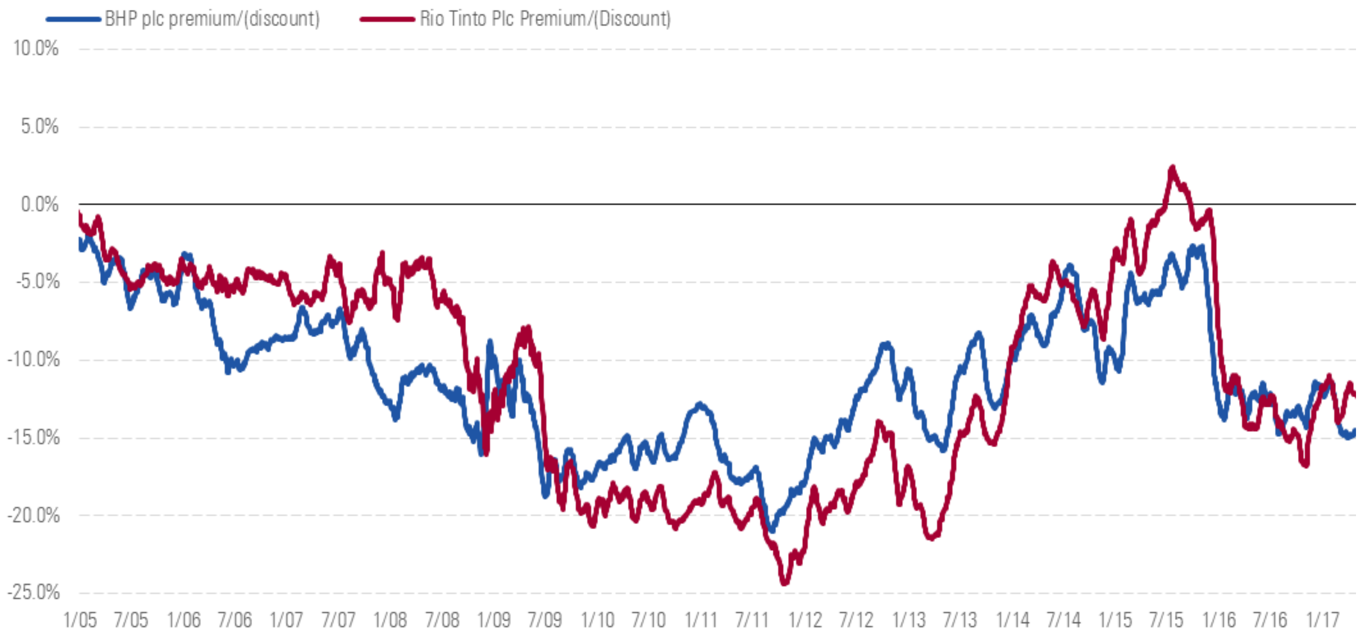
Exhibit 17 Fortescue's Total Shareholder Returns Have Shown Greater Variability



Source: Morningstar/RBA

We think the premiums for the Australian listed shares of Rio Tinto and BHP, versus their U.K.-listed counterparts, primarily reflects the value of the franking credits for Australia-based shareholders. When profits are high and shareholder expectations for dividends and buybacks are high, we would expect the ASX-listed shares to trade at a greater premium. When profits are low, or if the majority of forecast free cash flow is committed to being reinvested, rather than returned to shareholders, we would expect the premium for the Australia-listed Rio Tinto and BHP shares to be low. The other variables may be implicit currency bets, on the part of the investors, or potentially liquidity, but we think these considerations are minor in comparison to the value of the franking credits for lowly tax investors, such as superannuation funds or retirees.

Exhibit 18 Expectations for Greater Dividends and Capital Returns the Likely Driver of Greater Discounts for Rio Tinto and BHP's London-Listed Shares



Source: Company Reports/ Morningstar

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