

MIND YOUR MINE!

METALS CHALLENGES AND OPPORTUNITIES

NOVEMBER 2012

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BLACKROCK INVESTMENT INSTITUTE

The BlackRock Investment Institute leverages the firm's expertise across asset classes, client groups and regions. The Institute's goal is to produce information that makes BlackRock's portfolio managers better investors and helps deliver positive investment results for clients.

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SO WHAT DO I DO WITH MY MONEY?™

Natural discounts

- ▶ Mining stocks appear good value because of looming supply gaps for most metals.
- ▶ Miners currently trade at a discount to the prices of the underlying metals they dig up.
- ▶ Metals prices (if sustained at current levels) support higher equity values.

Mining makeup

- ▶ Copper producers should do well because supply challenges will likely keep prices well above marginal production costs.
- ▶ Low-cost iron ore miners look attractive because the industry includes many high-cost producers.
- ▶ Avoid most aluminium makers (high inventories and production costs), nickel miners (new supply) and zinc producers (sluggish demand and oversupply).

Location, location, location

- ▶ The United States, Canada and Australia are top resource countries, with cost inflation abating.
- ▶ South Africa, Indonesia and Argentina carry risks of poor governance and resource nationalism.
- ▶ Frontier markets such as Sierra Leone show promise due to improving infrastructure.

Size matters

- ▶ Global diversified miners tend to have the best assets and management. Capital allocation makes all the difference.
- ▶ Avoid most pure explorers: The chances of finding commercially viable deposits are slim.
- ▶ Medium-sized miners may offer upside – depending on which metals their portfolios hold and how well they can carry out growth projects.

The opinions expressed are as of November 2012 and may change as subsequent conditions vary.

First words and summary

The past decade marked a mining renaissance. Metals prices awoke from a long slumber and spiralled upward. The industry racked up record profits and broke ground on mega projects.

Then came the side effects of skyrocketing costs for equipment and skilled labour. Host countries demanded larger shares of the mining pie, making for a comeback of resource nationalism. The financial crisis delivered a blow to demand. China first soared, then slowed. Metals prices and securities got dented as a result.

The question now is: Have the superstars of the last decade become the supernovas?

Our short answer: No. The longer answer depends on the superstar's health. A thorough diagnosis is needed to gauge whether a mining champion of the past can still perform. We suggest a physical exam that includes:

- ▶ Reviewing all mining projects and their locations
- ▶ Inspecting the commodities portfolio
- ▶ Analysing supply challenges and demand
- ▶ Estimating returns on capital spending
- ▶ Checking for the presence of (growing) dividends

This physical should be followed by a psychological test with one key question: do you have the discipline to squeeze out a return on each asset (and can you suppress a natural tendency to chase after more resources)? This is meant to test the ability to put profit above production goals.

Other conclusions from our mining checkup include:

Different world

The era of supercharged economic growth is over. The developed world is broke and leadership to turn things around is sadly lacking. The eurozone is no easy fix, the US fiscal situation is worrying and China's economic growth is slowing.

Slower but not lower

China, the world's biggest metals consumer, still has a ravenous appetite. The country's consumption of copper, aluminium and nickel is expected to double in the next decade.

Supply side

Current mines cannot hope to meet global demand after 2015, opening up supply gaps for many metals – and investment opportunities. Indeed, we think the next decade of natural resources investing will be very much about supply challenges.

Volume wars

Mining requires lots of capital and time. Once projects finally come on stream, miners rush to produce – even when there is no market. These volume wars kill metals prices – and valuations of miners. Smart companies work to ensure solid returns on current and future assets.

Balancing act

The mining mantra of the past decade was: 'Grow, grow and grow.' This led to a boom in capital spending – with diminishing returns. Now, shareholders demand immediate payouts. The best companies balance the need to invest and develop new mines in the long run with the necessity to give shareholders a decent return in the short term.

Risky business

Supply challenges, ranging from cost inflation, strikes and disappointing output, hammered mining stocks in 2012. We believe risks are here to stay – and bode well for metals prices in the long run. The winners will be experienced miners owning the right metals in the right places at the right time.

Disruptive technologies

What could spoil this (more exclusive) mining party? New exploration techniques, energy-saving measures and metals alternatives. These do not dominate headlines – but may make all the difference in the long run. Demand can evaporate when better or cheaper alternatives become available. Think whale oil and rubber.

BLACKROCK'S MINING FORUM

Are the boom times over in mining? This was the main question at a recent forum organised by the BlackRock Investment Institute. Our answer: No ... but miners and investors alike must become pickier about their investments.

Participating in the forum were leading BlackRock portfolio managers, six top industry executives and two experts from research firm Wood Mackenzie.

Demand: Chinese puzzle

Chinese demand is key for the mining industry because the country accounts for about half of the global consumption of many metals. Doomsday tales about slowing Chinese growth appear overdone. Gross domestic product (GDP) is still growing at an annual clip of around 7.8%, outpacing all other major economies and most smaller ones.

Pundits see growth stabilising in 2013. China's once-a-decade leadership change later this year plays into this. The new leadership will likely want to prove its economic mettle. This raises the prospect of fiscal stimulus. Inflation is abating, giving the new leaders more manoeuvring room to boost the economy. The recent strengthening of the currency suggests fears of capital flight may be overdone.

We could see annual GDP growth fall to 5%–6% by 2015 as the country slowly moves to a consumption society, from a command economy that puts a premium on infrastructure investments and exports. This is a slow-motion metamorphosis, as we detailed in *Braking China... Without Breaking the World* in April 2012.

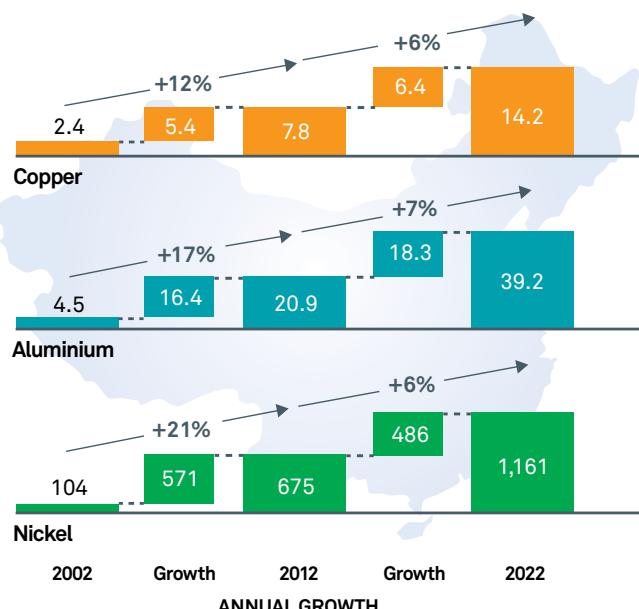
What does this mean for metals demand? Growth rates may plummet, but additional absolute demand could still be similar to the past miracle decade that propelled China to become the world's second largest economy. See the chart above on the right. Absolute tonnes of metals make all the difference given the supply dynamics.

Some metals will do better than others. China's capital stock – highways, ports, rail tracks, power plants and factories – already is similar to that of the United States and South Korea as a percentage of the economy.

This means China's consumption of basic commodities such as cement and steel is nearing peak demand (in 2015 and 2017, respectively, according to Deutsche Bank). By contrast, demand for late-cycle commodities such as refined copper and primary nickel is still in the early stages.

Eurozone demand is likely to remain subdued for years as efforts to preserve the monetary union are dominated by austerity. This cuts debt but also kills growth. Don't count on Japan to pick up the slack: The country's heavy industries are hampered by a strong currency, expensive energy and tighter regulations.

SLOWER—BUT NOT LOWER
China's consumption of key metals, 2002–2022



Source: Wood Mackenzie, 2012.

Note: Copper and aluminium consumption are in millions of tonnes; nickel in thousands of tonnes.

The United States, by contrast, is a beacon of hope for miners. Consider:

- ▶ The housing market looks to have turned the corner, as detailed in *In the Home Stretch? The US Housing Recovery* in June 2012. This should boost construction and use of metals.
- ▶ An abundance of cheap shale oil and gas raises the prospect of re-industrialisation, as described in *US Shale Boom: A Case of Temporary Indigestion* in July 2012.
- ▶ US Federal Reserve Chief Ben Bernanke has promised low interest rates for a long time. This means rock-bottom financing is available for major infrastructure and manufacturing projects.
- ▶ Labour is cheap and plentiful, with the total employment lower than before the financial crisis. Skilled staff is more readily available than in many emerging markets.

The party pooper is the rapidly growing US debt load. All is well if politicians can work together to navigate the 'fiscal cliff,' the perfect storm of tax hikes and spending cuts set to take effect 1 January, and agree on a sustainable budget. This is a big if, as pointed out in *US Election Cliffhangers* in October 2012.

Supply: Killing your own industry?

Supply from new mines is hitting world markets. Metals inventories have been building up in the face of weak demand, with copper a notable exception. The market consensus: Most metals will likely be in surplus for a while, pressuring prices.

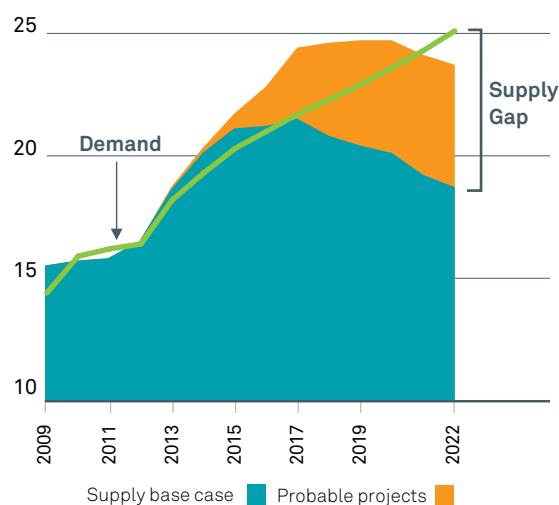
Expect a turnaround in 2016, when demand for copper, zinc, lead and nickel will start outpacing production from existing mines, according to research firm Wood Mackenzie. Production will be hampered by depleting mines, falling ore grades and other challenges. New projects and technologies would need to materialise to fill this structural gap.

For example, the world will need 25.1 million tonnes (mt) of refined copper annually a decade from now, Wood Mackenzie estimates. Existing mines are expected to produce 18.7 mt in 2022, suggesting a supply gap of 6.4 mt. See the chart below.

New mines could close this gap, but even ‘probable’ mining projects tend to disappoint – or not materialise at all.

OPPORTUNITY GAP

Expected copper supply and demand, 2009–2022

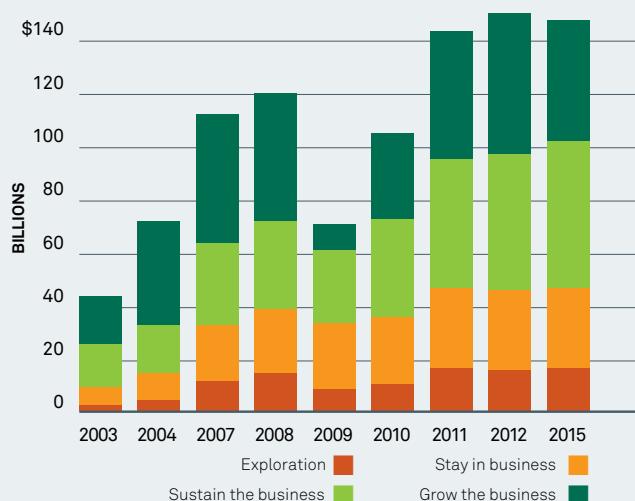


Source: Wood Mackenzie, 2012.

Notes: All figures are annual. Not all probable projects will get financing and approvals, start on schedule or achieve the estimated output.

HOLD YOUR FIRE!

Global mining capex, 2003–2015



Sources: McKinsey and Macquarie, 2012.

Notes: Spending in constant 2008 US dollars.

The story is similar for most other metals, with supply gaps opening up after 2015. The exception is aluminium, which is expected to have supply outpace demand for longer.

To be sure, projections come with big disclaimers in this industry. Mining executives themselves are the first to admit the shortcomings of their forecasts.

‘A pile of spreadsheets and all you know for sure is ... that you are going to get it wrong,’ one executive summed up, adding the solution is to bet on metals that are scarce, hard to extract and in countries with the adequate infrastructure and stable government.

Capital expenditures (capex) are set to slow, as investors press for payouts and miners preserve their firepower.

Smart miners are careful about where and when they place their bets, and have trimmed their average bet size. Big projects = big risks.

The industry’s capex tripled in the five years ended 2008, but is likely to stay flat the next three years, according to consultancy McKinsey and investment bank Macquarie. Projects are starting to get mothballed and capex budgets scrutinised. See the chart above.

This trend, if it persists, will bring down supply and boost prices in the long term. Supply typically disappoints anyway. Mining executives trumpet great discoveries and rosy output figures, only to scale back estimates later.

PLEASE, MR. POSTMAN

Delivery times of heavy equipment in 2011



Source: Xstrata, 2012.

Will history repeat itself in the next few years? Probably. Here are the key trends holding back supply of metals now – and in years to come.

High costs

Miners have to contend with skyrocketing wages, strikes, rising equipment costs and the need for new technologies to exploit hard-to-get-at deposits. Cost overruns are rampant – and may force mothballing of projects. Waiting times for heavy equipment are near peak year (2007) levels. See the chart above.

Little credit

Banks are shedding risk assets to comply with stricter capital rules. This includes a withdrawal from project finance. As a result, only the biggest miners have been able to easily get credit for new mines. A damaging side effect: Many small players use rosy output projections to attract financing – only to disappoint later.

Shakedowns

Governments are desperate for revenues, and foreign-owned miners make for easy targets. Miners will increasingly call a government's bluff, risking supply disruptions.

Lots of rules

Measures to protect the environment and workers make it harder to achieve projected output.

Low maintenance

Many mines have been running flat out for years, and maintenance has taken a backseat. This increases the risk of outages. See the chart on the right.

Few discoveries

There have been no large mineral discoveries since Chile's Escondida (which means 'hidden' in Spanish) in 1981. In fact, many 'new' projects are dogs from the 1980s with a second life. Countries such as the Democratic Republic of the Congo have rich deposits – but lack power, infrastructure and political stability. The sad truth as we see it: The average mineral geologist finds nothing (of substance) in his or her entire career.

Price volatility

Prices for bulk commodities such as coal and iron ore once were agreed upon quarterly or even annually. These days, many are priced daily on the spot market. For the Chinese market the trend is cargo by cargo and day by day. This can create a disconnect between long-term supply planning and demand.

The end result? We may see less supply than predicted.

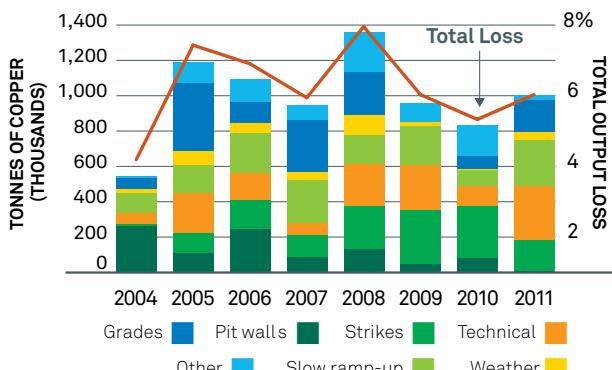
This would be bad news for consumers such as steel makers if not for one balancing factor that has plagued mining throughout history: oversupply. This capital-intensive industry has a penchant to keep producing. This works well when prices rise, but really hurts when they fall. In other words, miners are at risk of killing their own industry.

In most industries, weaker players die. This sets the stage for less competition and more pricing power for the survivors. In mining, the terminally ill are picked up for cents on the dollar. And the buyers crank up production again because their cost basis is so low.

Iron ore can be prone to volume wars because deposits are plentiful around the world. It is all about the cost of production for those metals. Copper, zinc and thermal coal are depleting resources, deposits are not ubiquitous and the price of entry can be steep.

DISRUPTIVE BEHAVIOUR

Causes of copper mine output losses, 2004–2011



Source: Macquarie, 2012.

Capex Conundrum

The looming long-term supply gaps make the case for developing new projects more powerful than ever.

Shareholders, however, are clamouring for dividends and share buybacks rather than increased capital spending. This creates tension between short-term shareholder demands and long-term planning needs. Our favourite companies have the assets and the management team to satisfy both.

In general, we think it is better to take over an existing mine than start one afresh. New 'greenfield' projects are risky – and many of the most promising areas are in unstable countries with little infrastructure. Plus, the bigger the project, the bigger the risk. If something goes wrong – and something invariably does – the effect is magnified.

The best strategy is to play the odds. Lead, zinc and thermal coal, on average, give the best return on investment and risk, according to Wood Mackenzie. See the chart below.

Additional capex increasingly results in diminishing returns. Our bottom line: Mining is not about discovering deposits and developing them. It is about extracting commodities at a profit (in a socially and environmentally responsible way).

Miners, however, often believe the former is true:

- ▶ Miners must have the backbone to stand up to short term pressures and invest for the long term, they say.
- ▶ Depleting assets are the very nature of the industry, and resource-rich players will rule the roost, they believe.
- ▶ Like gamblers (or many investors), many miners can only remember their winners and tend to forget about the losers. Every miner can point to a cheap discovery that became a multibillion-dollar asset.

Investors are sceptical. Many long-term resource investments have a chequered past of cost overruns, delays and output shortfalls. This is partly why valuations of miners have lagged the overall market.

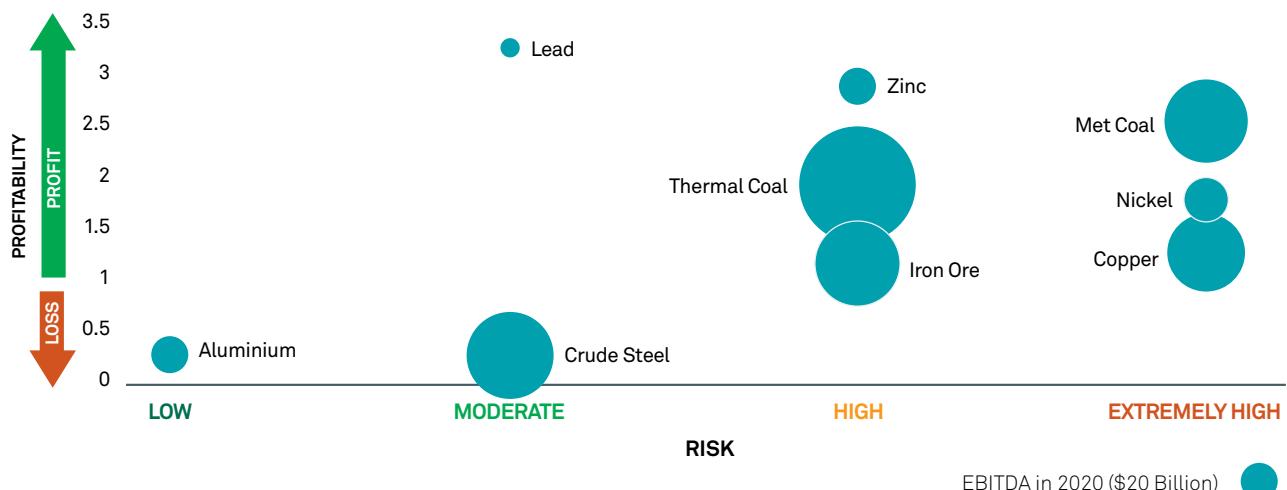
One factor should give investors pause, however: The biggest winners typically have been those companies that go against conventional thinking.

In the early 2000s, shareholders demanded growth above all else. Mining executives happily responded, and costs spiralled out of control. Now the shareholder mantra is: Shrink and pay me out. So this may just be the time for miners to invest, albeit with extreme caution.

In the end, it is all about balance. Balance between short-term returns on investment and long-term planning to develop choice assets. And balance between metals – with the goal to own them at the right times in the right places.

RISKY BUSINESS

Risk return analysis of new mining projects



Source: Wood Mackenzie, 2012

Notes: Profitability is the net present value of cash flow divided by capex. Assumes a 10% discount rate in real terms, 25% corporate tax rate, 100% funding with own equity and no residual value after 20 years. Risk is based on delays and cost overruns due to infrastructure needs, licensing, mining methods, logistics and time to completion. Projected EBITDA in 2020 is sized proportionately.

(UNWELCOME) COMEBACK

It almost feels like the 1970s: nationalisations and strikes against a backdrop of bumper metals prices and rampant cost inflation. Resource nationalism is back.

The results range from 'big bang' nationalisations such as Argentina's taking over the operations of Spanish oil company Repsol to indirect measures such as mining taxes. And then there is incremental resource nationalism: a little tax here, a hiring requirement there, topped off with the gradual increase in local ownership.

The reasons are simple: Governments are desperate for money and commodities prices are well above their historic averages. Miners understand they make easy targets. They are mostly foreign-owned entities operating in poor nations – and cannot pack up and move their mines to more favourable jurisdictions.

One strategy to fend off resource nationalism is slowing or halting investment. Faced with the prospect of disappearing revenues and jobs, governments typically become more reasonable.

Miners can also help their own cause by getting real about costs. Companies now trumpet their juicy profit margins; the difference between cash costs of production and selling prices. These do not take into account all the capex needed to get the stuff out of the ground. Profits look a lot slimmer once you do. See the chart on the right.

TRUE COSTS

Gold Miners' Costs and Profit Margins, 2008-2012



Source: Scotiabank estimates, August 2012.

True cost of production would make miners less of a target for resource nationalists. Such a metric would also make it easier to compare the profitability and prospects of mining companies.

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