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TAMING THE HYDRA

Volatility, Risk, and the Capital Cycle in Energy Metals

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In late 2018, we published a note examining whether volatility was a positive or negative for lithium investment. At the time, lithium pricing and lithium equity prices were at much higher (and ultimately unsustainable) levels. Lithium spot pricing has been more than cut in half and has wreaked havoc on the production plans of Alita, Nemaska, Albemarle and Mineral Resources, Livent, SQM, Galaxy, Altura, and Pilbara – not to mention their share prices despite the early run up in January 2020. The irony here is that the relative success of new hard rock entrants into the lithium sector has created an oversupply glut which has run well ahead of robust demand for the time being pressuring the whole sector. This has happened even as downstream players such as OEMs talk about battery shortages.

In short, nobody has been immune, and a lesson here is that while lithium is indeed strategic and necessary for a lower carbon future, it is a commodity/specialty chemical not immune from the capital cycle. The same could be said for other metals, shown below.

Source: Bloomberg

There is no growth in life or in business without pain. Adversity and loss are effective teachers and the last eighteen months in the Energy Metals space has been painful indeed for the bulls among us. One of our main goals in writing and research is constant evolution of our thought process. As such, it is prudent to revisit the role of volatility as a force for good in these markets. Rather than arrive at a binary answer (we would submit that the answer here is more nuanced), we think a closer examination of risk and where we are in the capital cycle can help investors hone their investment strategies and get a better feel for the data embedded in the complexities of the lithium ion supply chain.

Before a deeper discussion of volatility, risk, and what it means for the overall capital cycle, a few definitions are in order.

Though easily confused, it is important to remember that volatility and risk are not the same thing. Volatility is defined as the dispersion of returns of a security, index, etc, over time. In other words, it's not as important to focus on whether a security rises or falls in value, but rather ***how much*** the security price rises or falls

over a specific time frame. As a brief aside, there are libraries full of discussions on all types of volatility and we are approaching this from a high level in order to properly frame out how to think about sector-level investment.

Crucial to the distinction between volatility and risk is that volatility drives and influences risk. Risk can come in many forms (reinvestment, credit, currency, country, interest rate) and is broadly defined as ***uncertainty***. As lithium and cobalt pricing went parabolic in 2017, equity share prices followed suit. Similarly, as lithium and cobalt pricing experienced a heady case of mean reversion in 2018 and 2019, equity valuations reverted, perhaps even harder owing to some capital cycle dynamics to be discussed further down.

The reasons why energy metals prices rose and fell during the last cycle will always be subject to fierce debate, but the ability of investors to exploit that uncertainty - the risk - is what generated excess returns on both the long and short sides. Similar dynamics were experienced with rare earths in 2010-2011, graphite in 2012, and lithium as well in 2011-2012. Risks are not binary and are best thought of in terms of probability, meaning the likelihood of various events either adding to or harming returns.

To summarize, while volatility in lithium and cobalt pricing increases various risks around company and project-level investment, the key is to focus on the probability of gains or losses from these risks. The opaque nature of the energy metals markets means volatility is not an ideal indicator of long-term returns. Positioning for and hedging against tail risks such as cap ex blowouts or technical flow sheet challenges is crucial for investor and company survival. If anything, the risks drive the volatility, not the other way around.

With LME contracts for both lithium and cobalt chemicals in the works, this may be a viable method for hedging pricing volatility, though the real returns are likely to come from options strategies focused on energy metals equities as the probability of risks affecting share prices is greater than sudden moves (daily, weekly, etc) in chemicals pricing.

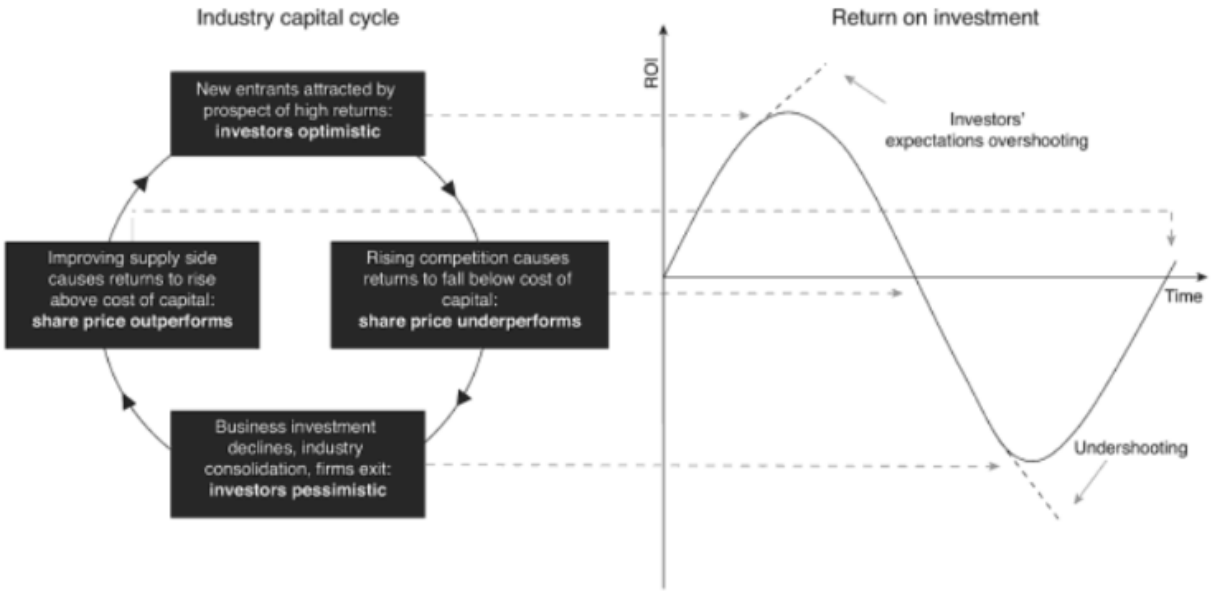
THE CAPITAL CYCLE AS A LEADING INDICATOR

For investors with a longer-tern view on risk and return, timing is crucial in terms of managing overall company and portfolio-level risk – and timing the market is thought of as a mug’s game. Monitoring the capital cycle for optimal timing of

raw material investments is important. These projects are characterized by high upfront costs (cap ex) and high (initial) op ex and so raising capital ideally when share prices are high, interest rates are low, or (perhaps most importantly) when commodity prices are rising can set a company on a sustainable financial footing to achieve a faster payback. Capital intensity is an important and telling metric for a project's viability. At the end of the day, the return on invested capital (ROIC) must be greater than the weighted average cost of capital (WACC) to maintain and grow a sustainable business.

It is our view that volatility and risk tolerance as described above are main drivers of the capital cycle. Investors in the Energy Metals sector would be doing themselves a favor by better understanding the drivers behind the cycle as opposed to a singular focus on lithium or rare earths prices, for example. The potential for higher returns can make capital in various forms more available (again, for an acceptable level of risk). How and when this capital is deployed and how it affects a company's capital structure is equally as important.

With risk-free rates in many parts of the world in negative territory today, investors searching for more yield (or riskier assets) makes intuitive sense. Why buy Ten-year German government bonds which currently yield -.339% when returns are higher elsewhere? The real question investors must ask if faced with this choice is where we are in the current capital cycle for the build out of the lithium ion supply chain or whichever sector you're focused on. Paradoxically, it may make sense to "hide" in lower yielding assets at different points in the cycle.



Source: Capital Returns

The above chart, from the seminal book on investment cycles titled Capital Returns provides a fundamental framework for gauging where an industry sits on the capital cycle "wheel". Given industry cost structures, it is our belief that investor pessimism at its height for Energy Metals and the main question is not "if" this cycle will turn, but "when". It was the perception of above-average market returns on investment in 2016-2017 that have allowed lithium companies in particular to raise and deploy several billion dollars in equity and debt backed capital.

This capital infusion demonstrated a key tenet of the capital returns cycle. Specifically, it is more focused on the supply response to industry shocks rather than demand. This is why the mining sector, in particular, has such a poor track record of matching supply and demand. Capital floods into the sector when pricing is high with market participants thinking that demand simply cannot be met in time. While demand remains robust, the oversupply we mentioned earlier alongside conversion bottlenecks has soured investor appetite somewhat. The thinking behind the capital cycle theory is that supply is easier to forecast relative to demand, though we're not sure this belief holds in the specialty chemicals world. Just ask Albemarle, SQM, Livent or Molycorp (pre-bankruptcy). Their supply additions have been rationalized, and the market has taken notice.

SO WHAT?

So if volatility and risk tolerance drive the capital cycle, we must address the original issue raised here: how to position and hedge against risks that aid in both the return **of** capital and the return **on** capital.

Clients will be aware of our views on technology as a positive force for driving costs down and creating moats despite the risks (remember, this is all about the amount of risk you're willing to stomach for a certain probability of excess returns). Technology-driven cost deflation is a benefit to society overall and nowhere is more ripe for a dose of cost discipline imposed by technology than the raw materials sector.

We see two ways forward for aspiring raw materials providers to join the decarbonization theme - leverage technology or partnerships with technology-savvy and well capitalized companies. Companies such as Lithium Americas (LAC:NYSE) and Standard Lithium (SLL:TSXV) are aspiring lithium producers which have chosen this path and we have been vocal on their potential as case studies for aspiring raw materials producers into historically small and specialized industries.

We also continue to believe that direct lithium extraction (DLE) and battery recycling technologies will be additive to the industry overall and are major areas of current research.

Volatility is a fact of life as there is no clear playbook for how raw material providers fit into the decarbonization theme. Therefore, balancing capital cycle dynamics, which requires patience, coupled with an embrace of new technologies is a prudent and viable way forward to better avoid the pitfalls that lead to capital destruction and we believe offer outsized returns for an elevated level of risk.

An open mind is your best weapon against market noise.

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