Why are battery companies investing in mines?

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As batteries for the electric and autonomous vehicle market develop, the downstream players that traditionally participate in chemical and battery fabrication have shown a propensity for investment in upstream mineral extraction and processing.

This was evidenced in September, when the news emerged that Chinese battery-maker Contemporary Amperex Technology (CATL) had become a major shareholder in Australian lithium producer Pilbara Minerals.

The CATL news is not an outlier; it's one of the many deals being seen across the globe. But why are battery companies taking these steps to vertically integrate into the extraction process?

First, it's worth considering why companies of any type would consider vertical integration in mining, and there are four major reasons.

1. **Reduce volatility in a downstream position.** Mineral pricing is inherently volatile, and insulation from this volatility is one of the main reasons for vertical integration, particularly when the ability to pass price volatility on to the next customer is diminished.
2. **Take advantage of improved margins in an adjacent value chain segment.** The capital-intensive nature of mineral extraction and conversion activities limits the potential for new entrants, and can create attractive market dynamics that drive higher relative margins, rather than for less-capital-intensive activities.
3. **Improve channels to market.** All businesses need a link to their customers, and the relative strength of that relationship is a factor in driving the returns available to each participant.
4. **Generate incremental demand.** Demand growth provides a larger absolute market for sales, but also ensures that the supply–demand balance remains in check against any overinvestment in extraction assets.

With these rationales in mind, and with the increased interest in electric and autonomous vehicles, it's little wonder that chemical and battery companies are looking at their strategic options. And the dynamics of the market for lithium-bearing minerals has provided the impetus for vertical integration.

In 2000, demand for lithium-based batteries contributed about five per cent of lithium demand – but that number has increased exponentially in recent times. By 2013, it had grown to about 30 per cent of demand, and in five years' time, we expect this to be in the 80 per cent range. Further, the primary share of that end-use demand source has shifted from traditional, small-scale, lithium-ion batteries for electronics and smartphones, into the much larger and rapidly growing sector of electric vehicles (EVs).

This growth has pushed lithium back into an 'immature' market dynamic, and this has proven to be troublesome at times for lithium-ion battery chemical and cell fabricators. While they look to build capacity to satisfy the rapidly increasing customer and end-user demand for batteries and precursor chemicals, the (real and perceived) volatility in lithium supply and prices has remained a threat. Prices for lithium carbonate hit levels of more than US$20,000 per tonne in 2018, but have dropped substantially to less than US$10,000 per tonne in 2019.

Should prices continue to see this extreme level of volatility, it will challenge companies' ability to approve and find finance for future capital investments, and to manage operational cash flow. Vertical integration is a valid and obvious strategy for managing this volatility, and both direct and indirect investments provide some level of support and insulation against market volatility.

Interestingly, this framework for vertical integration also encourages existing and emerging upstream players to vertically integrate downstream, and this may explain why so many deals have been achieved in the past few years.

For instance, the manufacturing of spodumene is of relatively low complexity, and producers therefore receive relatively low pricing and margins for the product as a concentrate (approximately US$600 per tonne of spodumene or US$4000 per tonne of lithium carbonate equivalent). Investment in a lithium refinery that converts spodumene into lithium carbonate (or lithium hydroxide) unlocks pricing of more than US$10,000 per tonne. In doing so, the spodumene producers have moved into an adjacent value chain segment, which appears to have improved returns even after considering the capital investment.

For both upstream and downstream participants, a vertical integration strategy is not without risks, and a number of factors must be considered before investments are made.

For one, while vertical integration upstream can reduce earnings volatility at the macro level, a large number of new variations are introduced into the enlarged business. At the mining level, these can include mineral grade variations, differential rock formations and blast outcomes, processing throughput and recoveries, and machine utilisation variation. And in the broader market, demand and price volatility are typically higher than for fabricators, with the balance sheets of extraction companies brought under stress during periods of low pricing.

Further, the investment in a new business segment could significantly distract management from the existing core business, increase internal management challenges with maintaining production balance between operating sites, create new challenges in transfer pricing and performance management, increase sovereign risk when investments are made in countries where beneficiation policies are being considered, and even create perceptions of channel conflict with external customers.

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It's critical that investors think carefully about their operating models and investment horizons to ensure that the strategic value in vertical integration is captured, and that returns on investment exceed the standalone net present value. A clear set of guidelines for integration should be developed – one that considers the options to acquire any new capabilities – providing a basis for decision-making on the degree of managerial integration, system and process choices, and internal price/risk sharing. In addition, strategic benefits should be identified as part of due diligence and a process put in place to secure them as part of the post-merger integration process.

In summary, while the rationale for investment differs between upstream and downstream participants, the two stories coalesce in the current period of market immaturity for lithium-bearing minerals.

The CATL investment in Pilbara Minerals is just one example among many of a battery company determining that it should take a 'pit to product' approach to battery development, and while current valuation perceptions are proving difficult to match, we expect more transactions as the shift to electric and autonomous vehicles continues to gather pace globally. AR&I

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