Price and currency volatility

Mining and metals

EY

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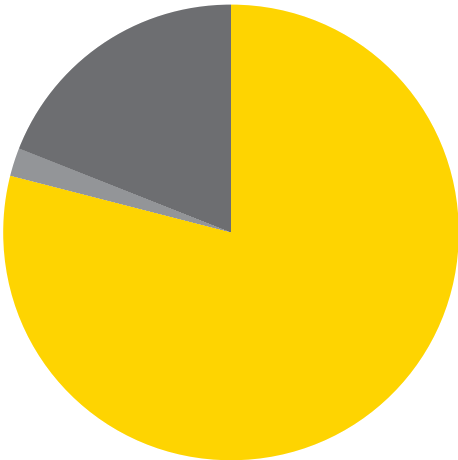
Across the mining and metals sector, there is renewed emphasis on performance, meeting targets and responding to shareholder needs, with the sentiment being one of long-term positive outlook. Producers are focusing on protecting margins and containing soaring operating costs rather than boosting output. Cost cutting and profit pressure are pushed in large part by market risks, including commodity price volatility, interest and exchange rates, and equity risk[1].

In the December 2012 reported results of the large diversified mining companies, mineral price movements of US$20.2b comprised 79% of the fall in period-on-period earnings. Producer currency movements generally provide a natural hedge against these movements, as they often depreciate with falling prices. However, large-scale quantitative easing in the US, Europe and Japan has prevented this depreciation from occurring in most producer nations. As such, the currency impact on earnings was also adverse but only by 2%. This loss of a natural hedge has made it even more critical for mining and metals companies to quickly respond to volatility.

Lower commodity prices and the higher cost of mining mean producers have sought to curb costs to maintain margins. In the case of gold, producers have, where practical, targeted higher-grade ore instead of lower-grade material, which became more economic to mine as gold prices soared above US$1,800 an ounce. Producers have deliberately lowered their gold ore grades as the gold price has risen but, if gold prices remain low, the process can be reversed. The result will be less low-grade ore processed, with gold grades increasing and cash costs being reduced. An unexpected but positive side-effect of this scenario is that gold mines with the flexibility to increase their head grade may actually produce more gold when prices are lower [2].

Diversified miners
December 2012 – Fall in earnings



Source: Ernst & Young research, company reports

Is hedging a sanctuary from volatility?

The drastic fall in gold prices during April 2013 increased pressure to hedge new production forwards. In *The lost art of hedging*[3], EY found that a hedge program is most valuable when cash flow is at its worst – when prices are low – as long as it was entered into when prices were higher. Companies should be cautious about the herd mentality to hedge with falling prices and close out hedge books during times of rising prices. Ideally, the time to hedge is when metal prices are near their peak. A good indicator is to determine when prices are trading above their historic trend average – where hedging is more likely to produce gains rather than losses. The recent drop in the gold price demonstrated how the speed of price changes challenges in-house risk management systems to respond in a timely fashion.

While the majors may have the financial strength to absorb the downward price risk, mid-tiers and juniors entering production might not. This means smaller producers may have to bow to pressure from potential lenders to enter new hedge contracts[4]. With rising costs being a sector-wide problem, we expect to see more companies using short-term hedging to lock in costs, and potentially profits, through short-term commodity price hedging.

1. "Business Pulse – Exploring dual perspectives on the top 10 risks and opportunities in 2013 and beyond: global report," EY, 2013.

2. "Australian gold miners give hedging the cold shoulder," *Reuters*, 24 April 2013.

3. "The lost art of hedging," EY, April 2011.

4. "Let's hedge gold again like we did last whenever," *Mineweb*, 24 January 2013.

"As supply begins to catch demand, we expect a period of even greater volatility in mineral prices and producer currencies. The knee-jerk reaction is to start hedging again. However, for most, the opportunity to establish an effective hedge is past — new solutions are necessary to deal with volatility. Managing revenue and cost volatility in the short term will be a focus for the miners."

Jay Patel

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Volatility and risk

The mining super-cycle has amplified the price signals for increasing supply. But it has also created the conditions for increased volatility as producers chasing massive returns may collectively overshoot supply, causing prices to crash and thereby reducing future supply via the industry "capital strike". This will be accentuated as many high cost, low-grade mines, whose lives were extended by the past decade's higher prices, will close over the next couple of years in the face of low prices. Until the supply-demand equilibrium is restored, we expect to see price volatility as the new normal.

Mining and metals companies must consider the potential price and currency outcomes well beyond both current forward curves and current mine plans. Given what we have experienced in recent years, many potential scenarios could exist. Examining those as static scenarios provides little insight as to the likelihood of each. The modern mine manager must consider these scenarios in a dynamic environment that considers the probabilities of each in a deterministic fashion. Best practice in the current climate has managers measuring uncertainties, probabilities and the impact decisions may have on expected returns of their mines.

This requires the quantification of risk, which is inherently difficult to do. It is important that risks are identified, including the appropriate interactions between risks. Many mining and metals companies do this but stop there. They don't go on to assign probabilities to these risks. Much of the price and currency uncertainty can be seen empirically with how the market is pricing uncertainty. Modern computing power and models enable not just the one scenario to be prepared, but multiple scenarios using numerical methods, such as Monte Carlo simulation. The risk or the uncertainty profile helps focus management's attention on what can be done to maximize the outcomes. It also focuses attention on how much the mining and metals companies may be willing to pay, by way of cost of action, to drive preferred outcomes.

In a period of falling prices it is important to remember that there are other options to avoid the risk or suffering the fate; the challenge for managers is to identify these options and evaluate them in the face of potential price and currency uncertainties.

Using the right tools to tame volatility

The humble discounted cash flow (DCF) model is as ubiquitous to mining as hard hats and high-visibility shirts. It is the right model to apply when projects have high net present values, low cash flow volatility, and management has little flexibility in the face of changing prices and currency rates. However, in periods of high metal prices or exchange rate volatility, the temptation of many is to increase the discount rate for this perceived risk. Alternatively, the risk of volatile prices can be somewhat offset by management taking advantage of price spikes and limiting the exposure to price slumps. Such choices could include:

- Undertaking no new action
- Suspending mining and process stockpiles
- Reducing shifts and hence production
- Deferring new development
- Moving to highest grade reserves
- Abandoning production and selling either the project or hybrids thereof

Such flexibility can alter a project's risk and value profile and static DCF analysis does not account for how these actions affect project value and risks.

Best practice responses to price and currency volatility include using probable measures of uncertainty and flexibility analysis. This approach will not only value a project in an environment of uncertainty, but also provide mining and metals companies with a guide for the possible courses of action to optimize their returns.

Unfamiliarity with these tools and the supporting theoretical basis by decision-makers is the biggest obstacle to their widespread usage. Organizations that do use them have a distinct advantage, as long as they are able to effectively communicate their quantified choices in simple, non-technical language. For those managers who find numeric modelling and simulation frustrating, alternate price decks and multi-scenario planning tend to be effective.

Being nimble with cut-off grades and mine sequencing

During times of low volatility in pricing, cut-off grades are often established during the feasibility study and then never changed. As the variables for determining the most economic grade to be mined and milled become more volatile, the frequency with which they need to be revised increases.

Between 2009 and 2012, sustained price increases encouraged mine operators to maximize production, sometimes at the expense of recoveries in the beneficiation plants. However, a new price and valuation environment is allowing miners to re-optimize the grades for both the mine and the mill. Changing the residence time of ore in the beneficiation plant may change the recovery and rate of production to suit a new price environment. Having pre-planned scenarios for mine and mill grade cut-off optimization in a variety of price scenarios is essential to a flexible response in a volatile price environment.

Like cut-off grades, the extraction sequence can influence the optimization of cash flows from a mine during a period of price volatility. Over the past decade, significant innovation in the techniques for long-term mine production scheduling has occurred. These techniques employ modern computing power to provide highest value mine sequencing to changes in variables, such as price. Some of the features include evaluations of all possible bench combinations, attempts to find the best 3D path through the deposit and nesting of interim pits culminating in the ultimate pit. The ability to quickly assess new price data and amend mine sequencing is imperative to reacting to price and currency volatility.

Increasing the flexibility of costs

Mine costs are often viewed as fixed with the only solution being to maximize production to lower the average unit cost. Managers who hold this perspective are typically most fatalistic in the face of price and currency volatility. However, it can be better practice for managers to build greater flexibility into their cost structure to provide a greater range of responses to price and currency volatility. These options allow managers to more easily vary the level of production without a major cost penalty. Some common examples include:

- Creating flexibility in maintenance to flex the timing of preventative maintenance
- Introducing mining contractors to provide labor flexibility
- Using equipment hire to support peak production
- Outsourcing energy supply to "power by the hour" model
- Varying stockpile management
- Undertaking campaign rehabilitation using contractors

Many of these options will challenge mining and metals companies to move from their traditional position of self-sufficiency. However, the requirement for flexibility often trumps the desire for total control and highlights the importance of partnering relationships with key suppliers of these services.

Challenging notions of scale

When production is no longer being maximized and accelerated, some of the old-style mine optimization concepts come back to the fore. Questions that should be posed include:

- Is the dilution created by large-scale mining equipment tolerable in a lower price environment?
- Does a smaller-scale truck and shovel fleet re-optimize capital for the reduced scale of production and does it provide the added benefit of decreased dilution?
- During lower prices, is the mine better off under-trucked rather than over-trucked even though this costs shovel utilization?

These may all result in lower production, potentially higher recovery and lower cost. The real advantage is planning in advance to enable fast action before the majority follow suit.

Outlook

During 2013 and 2014, mining and metals companies will be preoccupied with reacting to the downside risk of price and currency volatility. The more progressive organizations will be implementing a number of the initiatives outlined herein, which will benefit the mine in all parts of the price cycle. Some will be enticed, or forced, to enter into significant hedging, which will create its own problems during the next volatile upswing. The removal of loose monetary policy and quantitative easing may well enable a subsequent wave of volatility, when producer currencies reset themselves.

The next price upswing will provide an opportunity for mining and metals companies to commence a hedging program that can better protect them from future downward price volatility. In the meantime, management of short-term price risk will require miners to consider purchasing put options to protect themselves against perceived downside risk.

Steps mining and metals companies can take to respond to this risk:

- Develop a documented understanding of the volatility of critical cash-flow elements
- Improve the integration of mine and financial planning
- Improve the speed of mine planning to match volatility
- Develop a communication plan that quickly communicates changes to mine planning both internally and externally
- Give life to the identified risks in the business — to future risk management plans linked with expected returns
- Consider how price and currency volatility may change the corporate risk appetite
- Choose the right tools to identify and assess options to react to price risk
- Consider increasing the flexibility of costs to more easily vary the level of production, even if it increases overall cost
- Prepare for a future hedging program when prices once again increase, while managing short-term price risk

About EY's Global Mining & Metals Center

With a strong but volatile outlook for the sector, the global mining and metals sector is focused on future growth through expanded production, without losing sight of operational efficiency and cost optimization. The sector is also faced with the increased challenges of changing expectations in the maintenance of its social license to operate, skills shortages, effectively executing capital projects and meeting government revenue expectations. EY's Global Mining & Metals Center brings together a worldwide team of professionals to help you succeed — a team with deep technical experience in providing assurance, tax, transactions and advisory services to the mining and metals sector. The Center is where people and ideas come together to help mining and metals companies meet the issues of today and anticipate those of tomorrow. Ultimately it enables us to help you meet your goals and compete more effectively.

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