MINING & METALS

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ERNST & YOUNG

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EYeSight on Consolidation:

Backpedalling on the cycle

Mining EYeSight Series

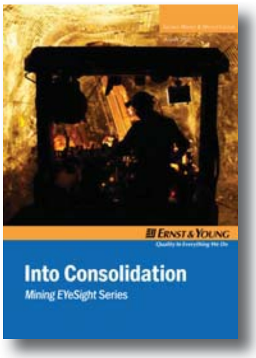
Ernst & Young in Mining & Metals

The Ernst & Young Global Mining & Metals Team is recognized as one of the leading advisory teams in the sector, advising 25 of the top 30 global mining companies and has advised on 7 of the last 10 mining IPOs on the London Stock Exchange. Ernst & Young is committed to providing strategic advice and issue-based solutions to the sector. Our global Mining & Metals Center connects teams of over 1,000 professionals around the globe who share information on current and emerging trends in the sector to help clients on buy-side and sell-side transactions, manage risk, optimize performance, and increase operational effectiveness.

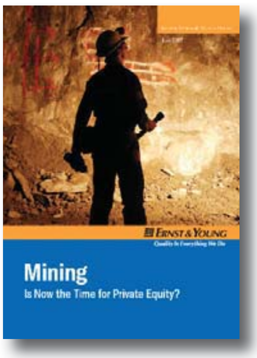
The Center is where people and ideas come together to help mining and metals companies meet the issues of today and anticipate those of tomorrow.

We're keeping a *Mining EYe* on the Sector

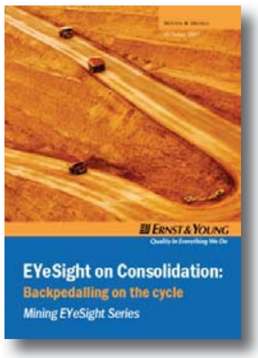
Mining EYeSight Series



Our *Mining EYeSight* series aims to offer an insight into the unfolding story of consolidation in the sector.



The first in the series asks the question 'Is now the time for private equity?'



This paper is the second in the series and seeks to identify what it is that is making the mining companies so acquisitive.

Mining EYe

Ernst & Young's *Mining EYe* index monitors the performance of AIM mining companies on a weekly basis and can be viewed at **www.ey.com/uk/miningeye**

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Introduction

EYeSight on Consolidation: Backpedalling on the Cycle

The pace of consolidation in the mining industry shows no sign of slowing. The continuing, robust levels of metal and mineral prices are fuelling the drive for growth through acquisition.

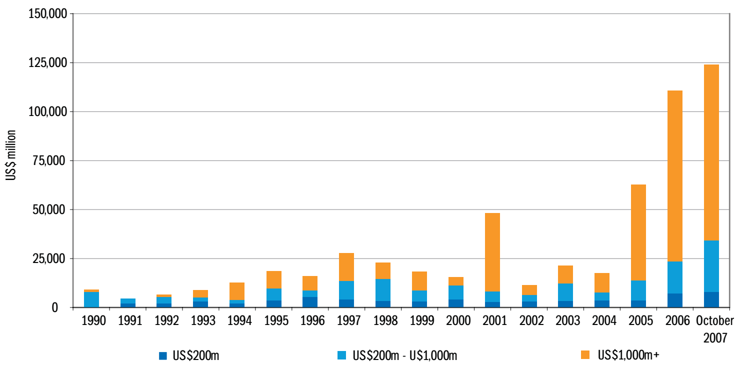
Rio Tinto's acquisition of Alcan, in November 2007, is only the most recent chapter in the consolidation of the mining industry. 2006 saw almost US$70 billion of transactions in the sector, 2007/08 may well see even more, particularly if BHP Billiton's recent offer for Rio proves successful.

All of these transactions have taken place in an environment where commentators speak of the sector being near the 'top of the cycle' and analysts predicting huge declines to current metals prices in the long term.

This paper looks to explore three key themes:

- Looking further back than the usual 5-10 year timeframe, how cyclical is the sector and, in real terms, how high are current metal prices?
- Given the huge number of variables to consider, what chance do metals analysts really have of accurately forecasting metals prices even 12 months forward?
- What could this mean for the sector going forward as the consolidation seems to continue apace?

Global Mining M&A Deals 1990–2007

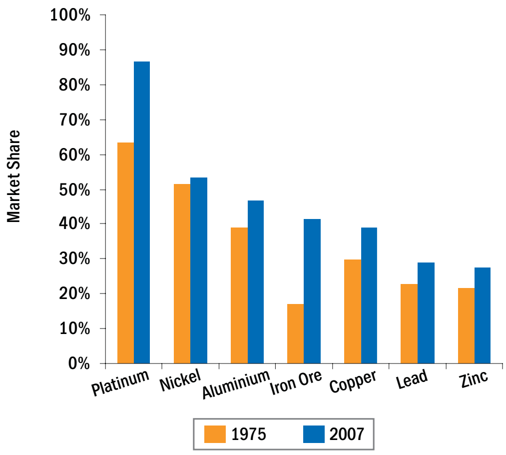


Source: Thomson One Banker

> ***How cyclical is the sector?***

> ***What chance do metals analysts really have of accurately forecasting metals prices?***

Global Concentration – Top 5 Producers



Source: Raw Materials Group

This chart shows how consolidation in the mining industry over thirty years has reduced the fragmentation of supply, and is starting to concentrate production into the major mining companies.

This is most prominent in iron ore, where over 40% of production is now controlled by the top five producers, compared to less than 20% in 1975.

How cyclical is the sector?

Traditionally, the perception of the mining cycle has been that the mining companies respond to high prices by bringing on too much new production, which tips the balance of supply and demand to oversupply, in turn leading to lower prices. At low prices the high-cost mining companies start to lose money and shut down capacity, and this then leads to supply shortage and price increases.

This historical behavior by the industry, however, does not occur in isolation. It is heavily influenced by the overarching economic cycles of periods of growth and contraction.

The charts on the far right show metal prices over more than a century, and in real terms. They highlight a number of periods that have been interpreted as cycles in the mining industry. We believe that there have been specific reasons behind most of these cycles which are unlikely to be repeated in the near future. For example, we believe that the weak prices experienced in the 1990s were in large part a reflection of the collapse of the Soviet Union. This simultaneously triggered the release of 50 years of accumulated stockpiles of minerals alongside a sharp reduction in domestic demand in the Commonwealth of Independent States (CIS). These metal stocks, which had been mined at, quite literally, any cost during the Cold War may have forced down the traded metal prices to artificially low levels until those stocks were eventually depleted — at exactly the time that demand returned.

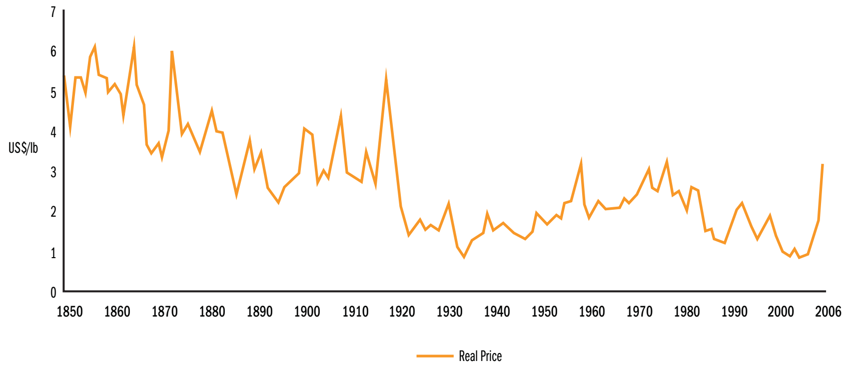
It should also be recognized that the availability and the use of so many of the metals that we take for granted is actually a relatively recent phenomenon, partly driven by technology. ‘Relatively recent’ here means about a century for metals such as aluminium, and mere decades for a whole host of other metals such as titanium and even uranium. On top of the traditionally recognized economic cycles are the really major developments represented by, for example, the Industrial Revolution, the rise of the US economy, the Cold War, the subsequent collapse of communism in the Soviet Union and now the industrialization of China.

It is our view that current metal prices are actually a return to sustainable price levels following an extended period of artificially depressed prices, rather than the conventional wisdom that the industry is near the top of a cycle.

Maybe this time it is different . . .

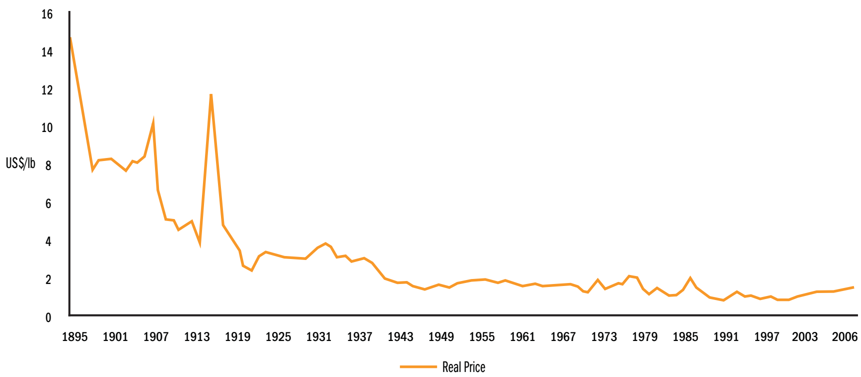
Metal price charts

Copper: Real price at 2006 prices



Sources: USGS, Ernst & Young

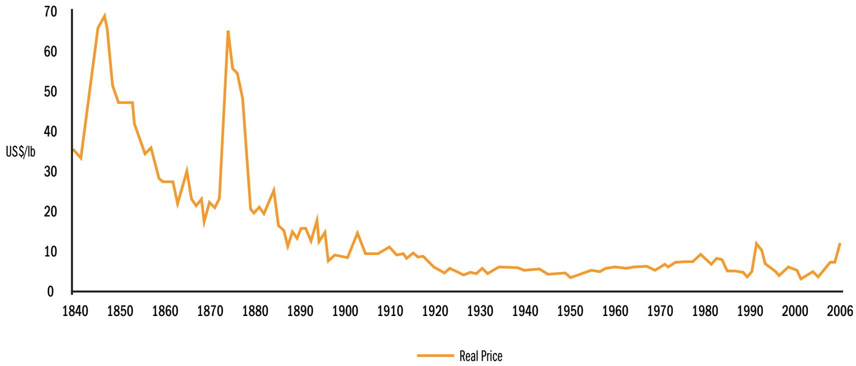
Aluminium: Real price at 2006 prices



Sources: USGS, Ernst & Young

In these charts the deflator used is the US CPI, in use since 1913. Prior to 1913 an estimated CPI provided by the US Federal Reserve Bank of Minneapolis is used.

Nickel: Real price at 2006 prices



Sources: USGS, Ernst & Young

The challenge of forecasting

Price forecasts are essential for industry participants to make the critical decisions as to whether or not to commit the huge levels of finance required to develop new mineral projects — or, alternatively, to acquire existing mines. The forecasts are also used by market analysts, credit rating agencies, investment groups and bond market participants, among others. These predictions of metal prices are serious matters.

The sector looks to the metals analysts to provide insight and foresight on some complex markets — to predict the future. To give them the best chance of doing this they have to research diligently every aspect of the factors influencing the various metals markets, including:

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Supply

- Every producing mine of significance must be catalogued to understand its underlying geology and depletion rate, lifespan and cost structure.
- Major new and proposed mining projects must be known, with probabilities assigned as to whether, and when, they will come to fruition.
- For longer term supply sources, the probability of further discoveries and developments within the known geological provinces of each mineral must be assessed.
- The various aspects of the extractive metallurgy – the risks and costs associated with the processes – and the impact of new technology, must all be examined.
- The availability and costs of the bulk overland transport, along with the seaborne carrier trade has to be understood.

Demand

- The growth, or contraction, of the global economy and the consumption of the specific metal, with particular emphasis on rapidly growing geographics, must be analysed.
- Any modification to demand through the potential for thrifting or substitution, and the impact of recycling must be factored into demand projections.
- Emerging technologies that will cause changes in the pattern of demand.

Pricing

- Knowledge of the pricing mechanisms is clearly important given the significance of metals trading in London, Tokyo, New York, Chicago and other major trading platforms.
- The impact that speculative investors may have on short term pricing structures should be understood, especially given the historic record of attempted manipulations of some metal prices.
- Movements in inventories and stock, positions held by the major traders, and the impact of published and hidden stockpiling must be analysed.

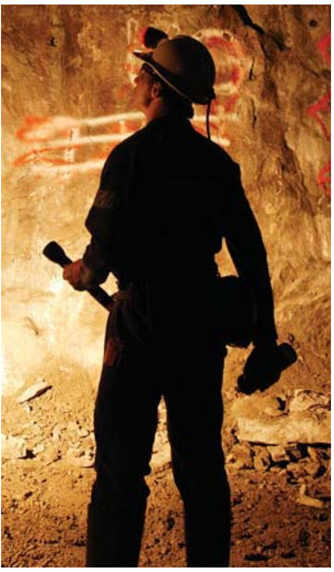
Despite this high level of expertise, the accuracy of outcomes for the recent metal price forecasts has been consistently disappointing. This has been, not coincidentally, at a time of sustained market strength and rising metal prices over the last three years. Analysts, almost universally, have been predicting a sharp decline in metal prices to return to the average levels of the previous ten years.

It is only when the mining companies are really convinced that the future revenue from operations justifies the commitment of significant capital outlay that they will accept the risk, resulting in further capacity.

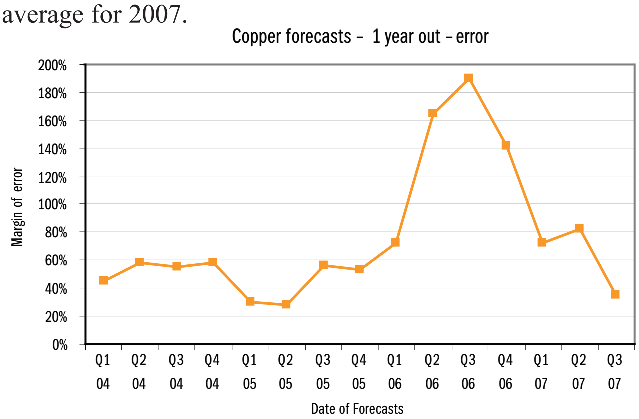
Investing just before prices plummet is a far harder mistake to survive than going along with cautious market sentiment and not making an investment.

As a result of underinvestment over the last 20 years, the level of additional capacity that the mining industry has planned appears to be, in many cases, simply inadequate to satisfy demand.

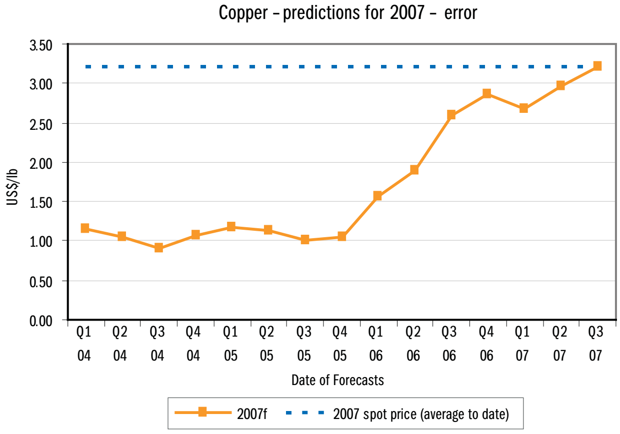
The perfect vision of hindsight



Ernst & Young analysts looked at the metal price forecasts made at various times during the last three years. These were taken from a large and diverse set of equity research notes published by the major investment banks. Short-term metal price forecasts were tracked over the three-year period to see how the analyst community were adjusting their view; for the 1-year-out graphs analysts' estimates of 12-month-forward prices to the actual market price 12 months on were studied. For the 'predictions' graphs, the 2007 forecasts made by analysts since the beginning of 2004 were compared to the actual average for 2007.

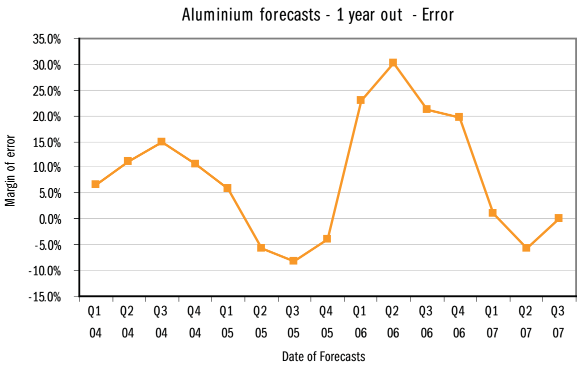


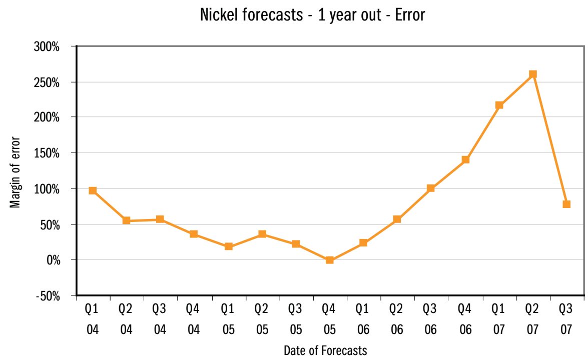
The chart shows, as a percentage, how forecasts of the copper price, one year ahead, have been adrift compared to actual. Even on such a short time horizon, it has been very difficult to get it right. The worst period was towards the end of 2003, when the copper price had really started to rise. At that point the consensus view was quite clearly that it was about to fall steeply back to the average of previous years. In the event, the reverse happened and it continued to strengthen.

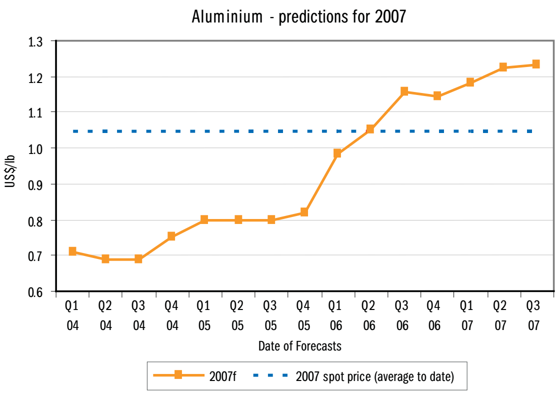


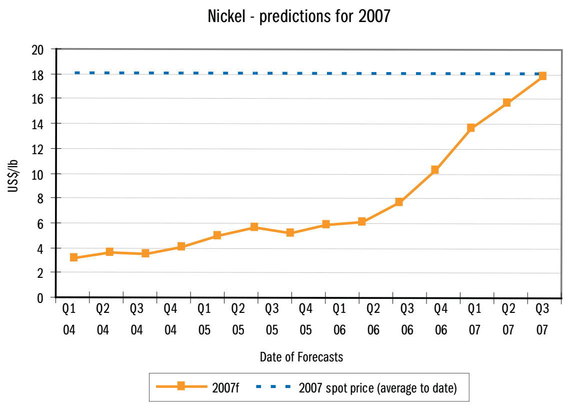
This chart shows how the predictions of what the copper price would be in 2007 have changed during the past few years. Right through 2004 and 2005 the overwhelming consensus was that copper would average somewhere between US$1.00/lb and US$1.30/lb. It was only during 2006 and this year that the forecasts for 2007 began to recognise what was becoming apparent, that the price was actually going to average well over US$3.00/lb.

Source: Ernst & Young analysis, Thomson Datastream









Source: Ernst & Young analysis, Thomson Datastream

Aluminium has behaved more rationally (perhaps more predictably) and the forecasts for the average price in 2007 were not only exact in the second quarter of 2006, but have even overestimated the 2007 price since then.

Predicting the nickel price during the last few years has been, clearly, challenging. As with copper, the accepted view has been that the price would fall sharply back to its average at the turn of the century. The nickel price rose steeply in mid-2007, which is demonstrated by the sharp return to accurate forecasting of the 1-year-out price that actually prevailed in the third quarter of 2007. The historic predictions of the price for 2007 have risen from US$4.00/lb to US$18/lb – as the price itself has done.

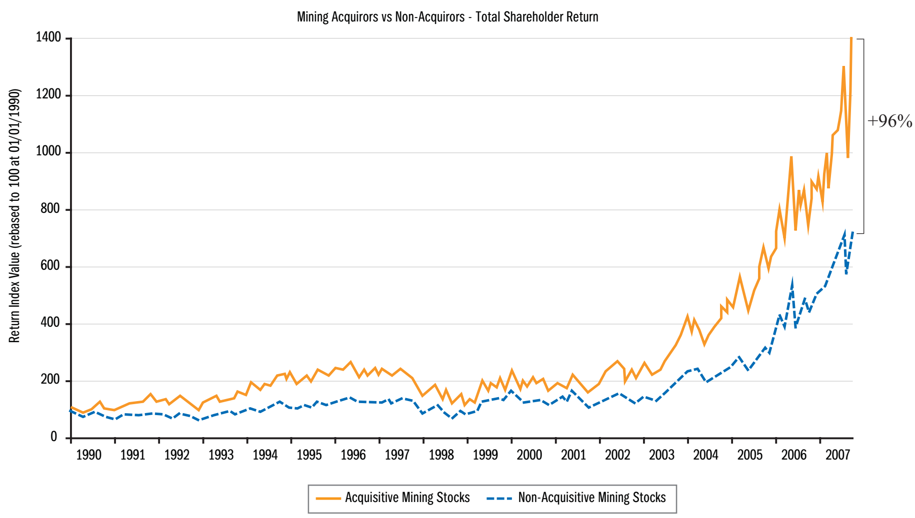
How have valuation errors driven market activity?

It is sometimes surprising that the metal price forecasts used in equity research notes are often hidden in small type, or do not appear at all. Yet, generally these price forecasts are the most critical factor driving valuation.

Metals prices have mostly risen sharply over the past three years. This is particularly true of the key industrial metals: copper, nickel, steel and aluminium. It is clear from our reading of the equity research notes that the metals analysts did not foresee these price rises, nor that the price rises would endure as long as they have. As prices have risen, so have the forecasts of the near future prices.

Our research has shown that analysts' short term metal price forecasts since the beginning of 2005 have been significantly adrift of where prices have actually settled, invariably on the pessimistic side, which leads to undervaluation of mining and metals equities.

This helps to explain the findings from some research which we undertook earlier this year. This shows that the mining companies that acquired production through corporate actions have consistently outperformed those that have chosen to grow organically.



Source: Thomson Datastream, Ernst & Young analysis

So what does this all mean?

The mining companies, by their actions, have made a clear statement that they believe in medium-to long-term metals prices — a key driver of valuation models used to support the prices paid during this consolidation phase.

By contrast, the stock markets are still catching up. Even though confidence in the sector increases with each acquisition announced, our analysis has shown that historic predictions of metal price forecasts have lagged actual spot prices by significant margins.

Time and again, significant premiums have been paid over market price. Over US$100 billion has been spent on the recent takeovers of Falconbridge (by Xstrata), Inco (by CVRD), Phelps-Dodge (by Freeport McMoran) and Alcan (by Rio Tinto) as the key players fight it out for control of low-cost production across the globe.

With a near impossible task of predicting future prices, it is no wonder that metals analysts are keen not to stray too far from the comfort zone of historic averages — history has proven that the mining companies, not wanting to miss out on key strategic assets, are taking a far more realistic view.

While the size and these transactions have only been increasing, we do not believe that they mark the end of the consolidation era. Ernst & Young would expect further strategic acquisitions to occur in the sector, while investment analysts underprice commodities relative to the corporates themselves.

Global Mining & Metals Center

Ernst & Young's Global Mining and Metals Center connects teams around the globe which share information on current and emerging trends in the sector to help clients manage risk, optimize performance, and increase operational effectiveness. 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.

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