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STRATEGIES FOR SUCCESSFUL INVESTING

MARKET WISDOM

Accurately valuing commodities is crucial. While many investors focus on the futures curve, what really matters is the ...

COST CURVE

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TO ACCURATELY ASSESS POTENTIAL investment return, wise investors in the energy and materials space should have a superior appreciation for the expected future price of the commodity and the cost of production. This requires an understanding of industry-wide supply/demand fundamentals and the organization's future production cost relative to the industry and the anticipated price received.

In searching for investment opportunities in the commodities



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space, we spend a lot of time looking at cost curves and forward curves to determine where to invest. This article discusses some current and future challenges to create and assess an industry cost curve, and the regulatory changes that impact the value of information from the forward curve. We will also discuss why this all matters for commodity investors.

COST CURVE VS. FORWARD CURVE

The first step is to define a cost curve, and how it differs from a forward curve. A cost curve represents an industry's cost of production relative to the quantity of commodity produced. The chart on page 2 is the expected cost curve for iron ore producers in 2020 (presented by Rio Tinto plc

during their marketing presentation on Oct. 9, 2014).

UNDERSTANDING THE CHART

The Y axis (or vertical axis) shows the price required to incentivize a specific quantity of iron ore. The X (or horizontal) axis indicates production. Each bar represents one of the industries' mines. The height of the bar is the cost of production, and the width of the bar represents the quantity of production from that mine. In order to incentivize the industry to produce two billion metric tonnes (Mt) of iron ore, the two billionth, or marginal tonne of production would require a price of approximately US\$100 to be produced (see A in chart).

Every commodity has a cost curve associated with its production. These are developed by researching each producer, looking mine by mine to determine its individual cost of production and the volume produced. Aggregating the results creates a cost curve.

In contrast, a forward curve is the financial price at which you can buy or sell a commodity for delivery at specific dates in the future. It totals all market participants' price of trade at all points in the future. In theory, the future or forward price of a commodity should converge with the future estimated cost of production. However, since it is impossible to know with certainty the future

cost of production, the forward curve changes as participants differ in how they assess their view of this cost. The future curve is derived from daily exchange trade data or comes from data providers like Bloomberg.

DIFFICULT TO PREDICT

Many factors can impact the cost of production. Examples are government regulation/taxes, labour rates (wage inflation), the price of fuel, and technological changes in extraction. Furthermore, the cost of production can be impacted by the relative value of the currency in which costs are incurred. As a result the cost curve is not static, and is variable.

As a recent example of this, the value of the Australian dollar has depreciated in U.S. dollar terms, which has led Australian-based iron ore producers to benefit from a decline in their U.S. dollar equivalent cost of production. This has impacted the cost curve and future price expectations of production.

We spend a tremendous amount of time meeting with pro-

ducers, speaking to industry experts and doing our own due diligence to determine our view of a company's true cost of production and the resultant industry cost curve. Nothing is taken for granted. Chief executive officers will always try to present their company's position on the cost curve in the most favourable light.

For example, most gold companies present their all-in cost of production in the US\$800 to \$900 dollars per ounce range, yet very few produce any free cash flow, even with gold prices at \$1,200 dollars per ounce. The cash flow statement provides the best insight into cash-generating reality and is often the starting point for our analysis. Does it confirm the management description of the business? If not, you need to dig deeper.

DIFFERENT PERCEPTIONS

The level of future demand is also important to determine the future price required to incentivize sufficient production. If in the example above, we assume future

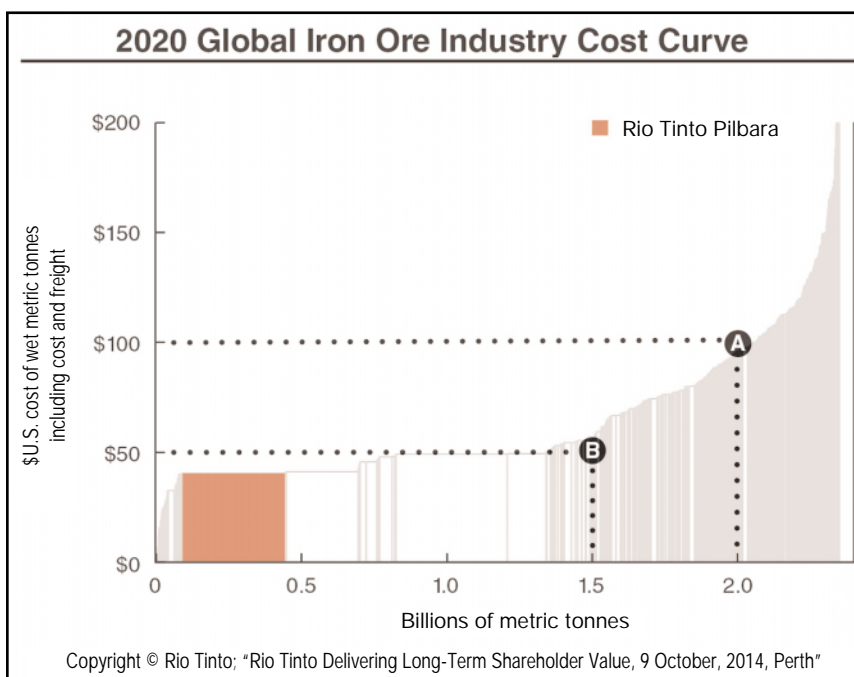
demand declines from two billion Mt per year to 1.5 billion Mt per year, then, to incentivize the incremental tonne, the price would only need to be approximately US\$50 Mt (see B in chart).

If this were the markets' view of the future, all else being equal, we would move lower along the cost curve, displacing higher cost producers, and future prices would likely move down to reflect the lower incentive price required. Different participants will have differing views of these cost factors. That's what makes a more efficient market. In the past year, iron ore prices have been falling due to increased low-cost supply from Rio Tinto and BHP Billiton Ltd. that is forcing higher cost producers like Cliffs Natural Resources Inc. to close unprofitable operations.

MARKET PARTICIPANTS

Many parties have an interest in a commodity's future price. For example, one of the most liquid commodity markets is oil. Producers will use the forward or futures market to lock in the value of future production, refiners will hedge their oil inventories, airlines will use the market to hedge their exposure to jet fuel. In addition to direct producers and consumers, the market also attracts investors in the commodity, or speculators who are willing to bet against the market, based on differing views of supply and demand.

The interaction of these participants allows for price discovery along the forward curve and creates the market while also providing liquidity. The more participants that are involved, the less likely it is that any one group can have an outsized impact on the



traded value of the commodity, or so goes the theory.

PRICE DISTORTION

However, in some cases, certain market participants may act in ways that distort the future price and results in a forward curve that is disconnected from the cost reality or supply and demand fundamentals. Financial players of great size or constituents that control producing assets may alter the supply. Or they may create artificial demand for a commodity to generate financial gains. Examples of these distorting practices have been seen with respect to the aluminum, copper and oil markets amongst others.

REGULATORY IMPACT

As a result, regulators have implemented new rules to preclude these players from distorting the market, or to restrict financially significant institutions from taking undue risks. In some cases,

they have increased the cost of participation, in effect forcing some out of the market altogether. Many bank-owned commodity trading operations have recently closed, or been sold, as the regulated cost of business did not allow for sufficient returns given the risk involved. Morgan Stanley just announced the sale of its oil trading operations due to more onerous regulations.

Over-regulating the market may increase the risk that liquidity is reduced to a point that legitimate users can no longer transact in sufficient quantity to hedge business risk. Reducing the number of participants may reduce liquidity and increase volatility, leading to greater uncertainty of future pricing, the opposite of the desired effect.

Resulting from some of the regulated or otherwise existing inefficiencies, the forward curve has not historically been a good predictor of the actual spot price that is realized in the future.

Although aware of these inefficiencies, many groups still use the futures curve to assess investment or economic conditions. Central banks and business owners are two such examples.

We believe an investor cannot rely only on the forward curve when assessing potential return, but must have a solid understanding of the industry cost curve and an appreciation of the factors that may impact its future shape. With an understanding of both curves, along with supply and demand, investors can flush out inefficiencies in pricing and increase their potential investment returns. ▼

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