

Core Research Sector Insights

COMMODITIES: A FUTURE DIVIDED

Why commodity prices are headed lower before heading higher

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INTRODUCTION

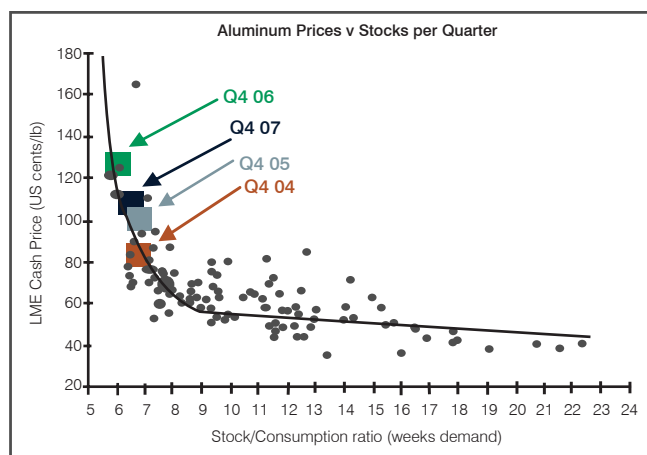
As the prices of commodities have soared over the past few years, many consumers and investors are wondering, how much longer can it last? Since the last economic trough in 2001 and 2002, gold is up 211%, natural gas 322%, crude oil 334%, silver 349%, and copper 485%! While many economists and statisticians are waiting for prices to revert to a historical mean, we are reminded of a quote from the economist John Maynard Keynes, "in the long run we are all dead." Indeed, business cycles all occur with a boom and bust period, but there appears to be something larger at work as global economies are cooling and commodities prices remain stubbornly high.

Demand can certainly weaken a commodity cycle, but the current cycle, similar to those over the past two centuries, will eventually end as a result of over supply. For these reasons, we are cautious on the commodity sector near-term, but we would strongly caution against the prognostication of its demise.

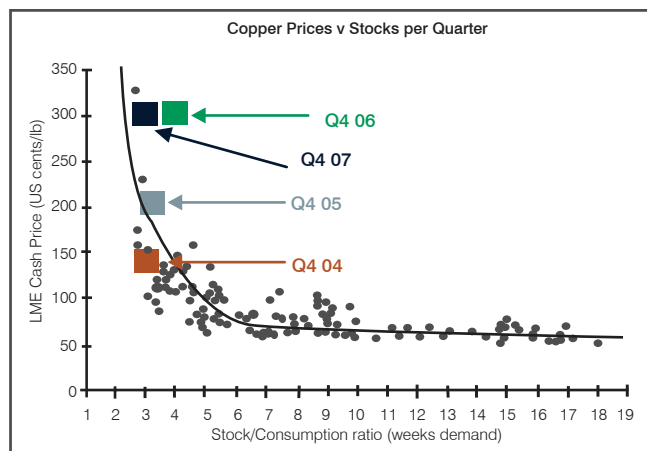
WHAT KEEPS US UP AT NIGHT

We are cautious on the commodity markets, particularly the equities that are leveraged to them. As demand cools, the supply function eases and commodity prices are sure to head lower. Given the leveraged nature of equities, if commodity prices fall, the corresponding equities will fall further. A large portion of the latest run in commodities was a function of availability. When availability declines, prices increase as one would expect. However, when supply gets low enough to worry consumers about the availability of even one unit, prices go vertical, as it did for aluminum and copper over the past four years (See Exhibit 1). The danger is that this phenomenon could reverse itself with a small increase in availability, sending prices down just as quickly. With demand slowing and a bit of slack in the supply function, this is a real risk.

Exhibit 1: As availability (inventory) decreases, prices increase; there is a point though when inventory gets too low and prices go vertical. The concern is that this could easily reverse.



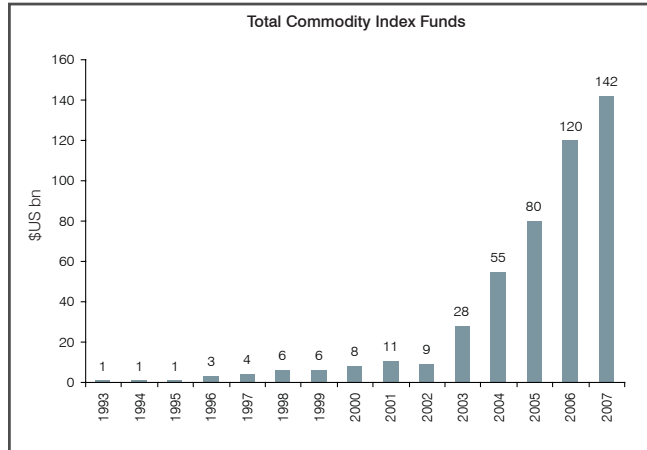
Source: LME, Macquarie Research March 2008



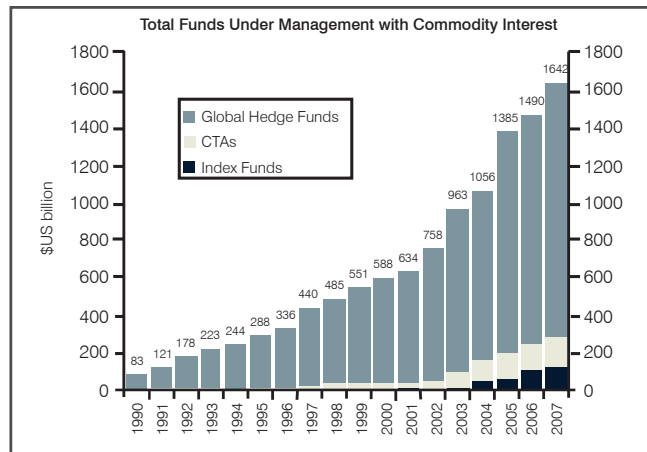
Source: LME, Macquarie Research March 2008

Compounding this issue are speculators and commodity fund investors. While it is nearly impossible to measure the impact or amount of investors playing in the commodity markets, they clearly have an impact on prices. Since financial contracts cannot add or remove supply from the physical markets, they simply exaggerate price movements and timing. Prices are likely to move in anticipation of tight or loose markets, taking prices above or below fair value. Eventually physical markets will clear and prices will adjust towards fair value. With speculators and commodity fund investors amplifying volatility, we are especially concerned with the vulnerability of commodity prices as demand slows.

Exhibit 2: While it is hard to quantify the impact of speculators and commodity fund investors, they have clearly grown in size and will increase the volatility and shift the timing of commodity price movements.



Source: Industry Estimates, March 2008



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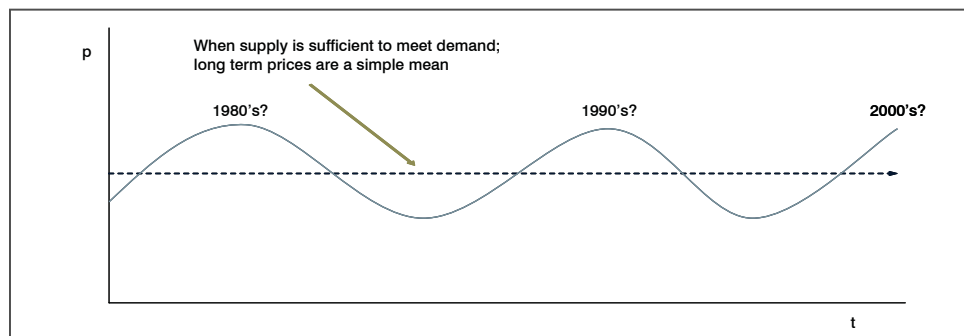
WHO MOVED MY MEAN?

With commodity prices up so much, it is difficult to imagine that they could continue their ascent, especially given the slowing global economy and the present deviation from their longer term average prices. However, the concept of mean reversion is a tricky one and may lead to some very dangerous conclusions.

Using a simple average over the past 20 and 30 year time periods (See top of Exhibit 3) might lead an observer to believe commodities and equities were overvalued beginning in 2004 and into 2005. What is easily overlooked is the fact that data from these time periods was generated in a world without the industrialization of a major economy. Technology facilitated discoveries of minerals and improved productivity, leading to a deflationary environment for commodities. During this time, investments in supply did not experience demand pressures created by the industrialization of a major economy.

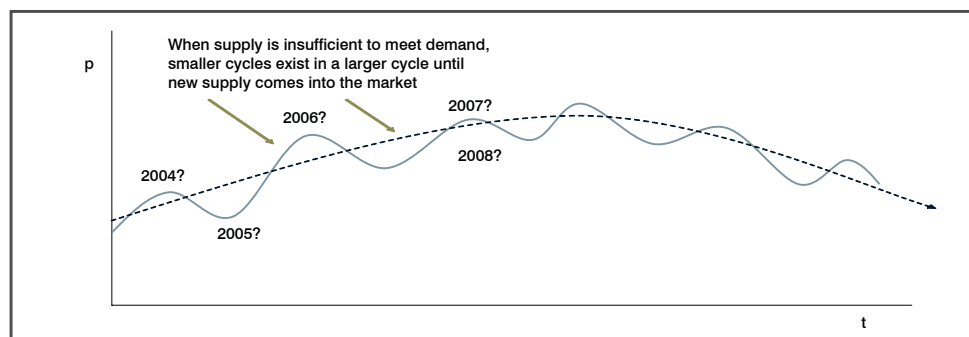
If you look at commodity pricing data over a longer period of time, since the 1800's for example, different trends in commodity prices emerge (See chart on next page). For the better part of the 19th and into the early 20th centuries, demand growth outpaced supply growth, and we experienced inflationary commodity prices. Over this time period, we saw economies recover from the War of 1812 and enter the Industrial Revolution with the invention of steam power. As a result, commodity prices rose.

Exhibit 3: Analysis of pricing movements over the past 20-30 years may lead one to conclude that the mean is static (flat) and well below market prices.



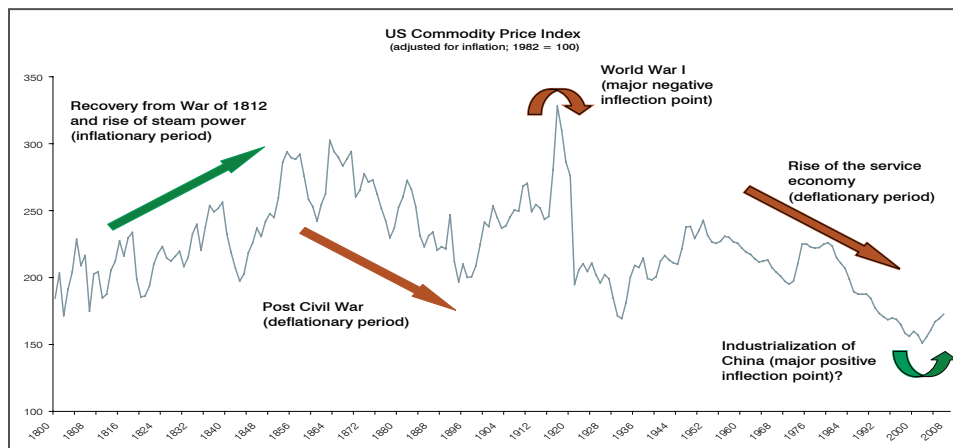
Source: The Boston Company Asset Management, LLC, Bureau of Labor Statistics and Factset Research Systems, March 2008

However, with the industrialization of a major economy and supply unable to keep pace, the price mean may be dynamic (curved) and closer to current market prices.



Source: The Boston Company Asset Management, LLC, Bureau of Labor Statistics and Factset Research Systems, March 2008

A look at historical commodity prices over the past 200 years appears to prove this thesis.



Source: The Boston Company Asset Management, LLC, Bureau of Labor Statistics and Factset Research Systems, March 2008

A TALE OF TWO CYCLES

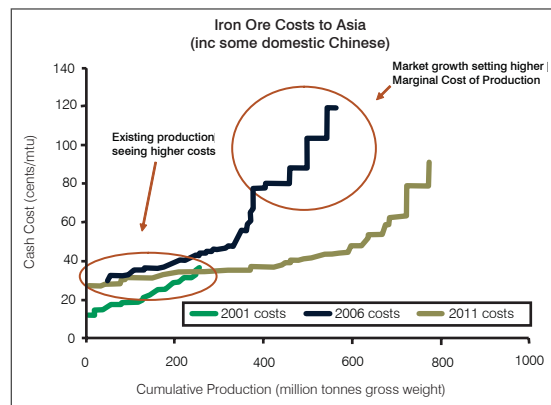
The key difference between commodity price trends over the past two decades and the past two hundred years is supply's ability to respond to demand. Existing assets, mines, oil wells, quarries, and ports, all have the ability to respond to small increases in demand that may be experienced over a typical economic cycle. However, when demand surges from a major economy industrializing, these assets are unable to meet demand and capital must be deployed to expand existing assets or build new ones. It is at this point when two cycles emerge: supply (the long cycle) and demand (the short cycle).

Investing in new supply is a fairly difficult undertaking and fraught with challenges. Identifying a resource deposit requires expenditures on exploration, which, given the probabilities of success, can take time. Once a resource deposit is identified, an engineering plan must be drawn up to extract as much of the resource as economically as possible. Construction itself takes several years, even without the cost overruns and schedule extensions pervasive in the industry today. The entire supply response can take from seven to ten years or longer. It typically begins a few years into a commodity upswing since producers need to believe that higher prices are sustainable before they invest in new supply. This is why most commodity pricing trends tend to last in excess of ten to fifteen years.

COMMODITY PRICING THEORY

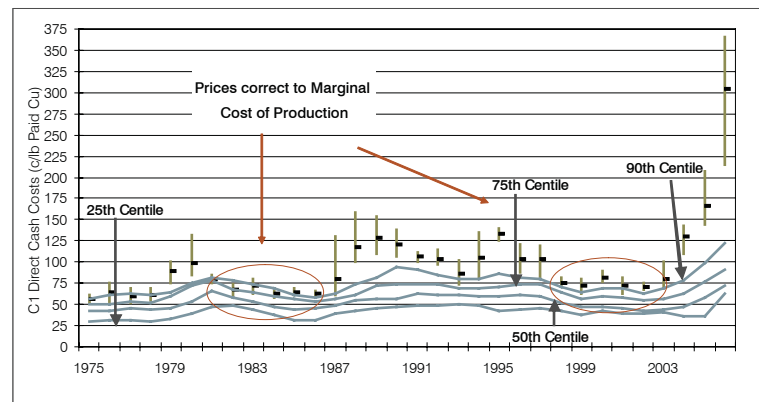
By contrast the demand cycle is far shorter, fluctuating with the traditional business cycle. In 2003 a global synchronized recovery was compounded by China's industrialization. Supply tried to respond and additional production came on at far higher costs (See Exhibit 4 at top), creating a higher floor for pricing. This costly supply is an intermediate solution until demand fades or new supply comes on.

Exhibit 4: This graph depicts the cost curve for iron ore. Note that as production increased (x-axis), it did so at a much higher cost.



Source: AME, Macquarie Research, March 2008

This graph shows that the price of the commodity doesn't get too far below the highest cost producer for long.



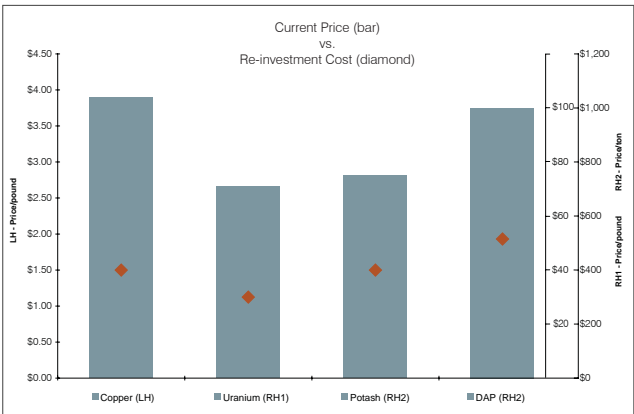
Source: Brook Hunt Ltd, 2008

The floor for any commodity is the Marginal Cost of Production. Simply stated, it is the highest cost producer who determines pricing. Once pricing gets below the firm's cost of production, it generates negative cash flow, and after a period of time, shuts down. This removes supply and tightens markets until prices recover to a level that entices the firm to restart operations. History has proven this logic to be true, with varying degrees of pain endured by producers enduring negative cash costs before shutting down (See Exhibit 4 at bottom).

THE NEXT TON

What about commodities that are priced well above their cost curve? Why have some commodities remained so far above their long-term price? The answer is that prices will move above the cost curve when supply is unable to meet demand and remain there until new supply satisfies demand. Then what will bring on new supply? As miners contemplate bringing on new supply, they have to decide if the long-term price of the commodity can provide enough return to make adding new supply economical (See Exhibit 5). For commodities with prices that remain above their cost curves, this can be attributed to one of two dynamics: 1) Producers believe the cost of new supply is higher than current prices and are not willing to invest, or 2) Projects slated to bring on new supply are having difficulty coming online.

Exhibit 5: Only recently have commodity prices, in the chart to the right, passed their reinvestment prices. Projects are having difficulty coming on but new supply is expected in 2010 or later.



Source: The Boston Company Asset Management, LLC, Industry Estimates, Factset Research System, 2008

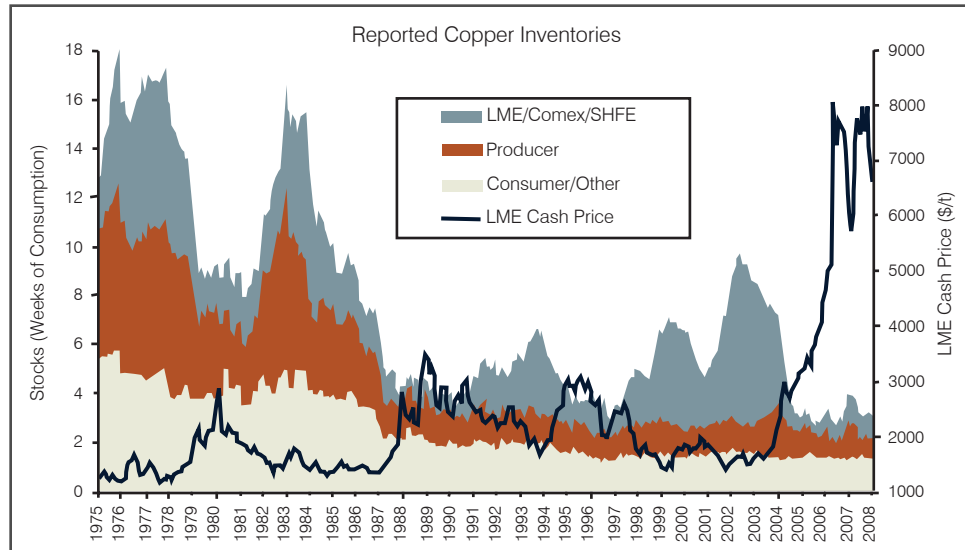
Once commodity prices have reached a point where newer, more costly projects are economical, new supply comes on and shifts the cost curve higher. This higher cost curve sets the new floor for commodity prices. The near-term floor for commodity prices is the current cost curve and the ceiling is the cost of the next ton of new supply, which invariably becomes the long-term price.

Despite technological advances, the cost of the next ton continues to climb. The geology and geographical locations get more complex compared to the easier-to-extract resources that have already been accessed. Compounding this issue, numerous producers scrambling for new projects limit the availability of resources like engineers, equipment and labor. Additionally, the costs of commodities to build and fuel assets and infrastructure have also increased.

THE INVENTORY CUSHION HAS EVAPORATED

We know that supply has been unable to meet demand since inventory levels have been steadily declining (See Exhibit 6). This means that a portion of consumption is not being met by current production. Inventories act as a buffer to commodity prices since they add supply to the market and prevent commodity prices from getting too high. Inventory levels are then replenished when meaningful new supply hits the market, as new capacity overshoots demand. This is a logical occurrence since projects with long lead times are built to accommodate future growth.

Exhibit 6: Steady inventory declines over the past 50 years are an indication that mine supply has been unable to satisfy demand. With inventories near record lows, the ability of inventory to cushion price spikes is dramatically less.



Source: LME, Comex, SHFE, ICSG, CRU, Macquarie Research, March 2008

When inventory levels are drawn down, the negative impact on commodity prices can be severe. At times, demand can be met entirely by inventory consumption with zero production needed. If inventories are sufficient, a major inventory draw can send prices crashing down, even below the marginal cost of production. This dynamic has played out regularly since the last round of major investments in new supply post World War II. However, consistent draws have left inventory at bare-bones levels not seen since before WW II. Without this shock absorber, even more pressure is placed on commodity production to meet demand and leaves no cushioning from commodity price increases.

BEWARE THE SNAP BACK

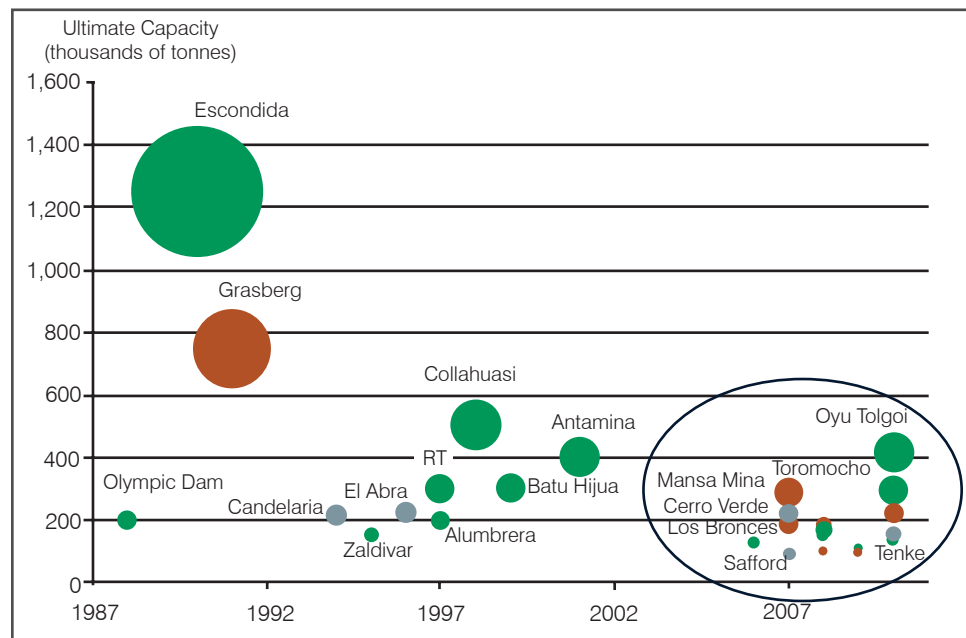
Global economies have cooled and may have farther to go, but what happens if demand returns? If demand remains anemic through 2010, then, yes, commodities are doomed. However, if demand returns prior to the turn of the decade, new supply will not be ready and inventories will not be available to restrain commodity price acceleration! It is likely that price appreciation will return to the same trajectory we have seen over the past few years.

HOW TO WIN

So if this is the case, that commodities are currently in perilous territory while at the same time poised to make new highs, what can an investor do? We would recommend seeking companies with exposure to the relatively tightest fundamentals as well as a low-cost position. Referring back to our discussion about cost curves, high-cost producers will set the floor for commodity prices at their profit breakeven point, which provides a spread of profitability for their lower cost competitors. Companies with low-cost positions will enjoy an extended period of above normal profitability and cash flow.

With respect to the commodities that appear tightest to us, we would seek out those that have particularly long lead-times or challenging geological hurdles. From a long lead-time perspective, we would favor commodities like iron ore (to make steel) and potash (a fertilizer nutrient). Neither of these commodities is particularly rare; in fact iron ore is one of the most abundant materials in the earth's crust. Both, however, require tremendous investments for scale and infrastructure in order to make extraction economical, which can take seven years or longer. Copper, on the other hand, is much harder to find as evidenced by the lack of major discoveries over the past 20 years (See Exhibit 7).

Exhibit 7: The size of the bubble represents the size of the copper ore body discovered (green for new supply, brown for expansion of existing assets). As you can see in the chart to the right, discoveries have gotten a lot smaller with the largest project, Oyu Tolgoi, only 1/10th the size of Escondida. The lack of new discoveries compounded by the record low inventories in copper have us very positive on the commodity.



Source: Brook Hunt and Phelps Dodge forecasts

Focusing investments on commodities with tight fundamentals and producers with low-cost positions is the right approach for these markets, but caution is warranted. We would recommend a modest allocation to investments of this type and at the first signs of an economic recovery by 2010, we would aggressively increase our position sizes.

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Robin is an Equity Research Analyst on The Boston Company's Core Research Team, covering the basic materials sector, following the coal, metals & mining, chemicals, paper, packaging, and construction materials industries.

Prior to joining The Boston Company in 2006, Robin was a Global Research Analyst at State Street Global Advisors, covering the basic materials sector. Prior to that, he developed, implemented, and maintained the global macro-economic sector model for the Strategy Team at State Street Global Advisors. Other positions held by Robin included Credit Risk Analyst at PNC Bank evaluating credit risk of corporate banking clients, and Finance Associate at Vanguard Group, responsible for account and wire reconciliation.

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