

The Commodity Super Cycle has ended - We do not think so!

By Carmen Mpelwane & Markus Bachmann | January 2014

Resources equities delivered highly disappointing returns over the last three years. Many commentators now proclaim the end of the commodity super cycle and predict that these resources equities will keep underperforming. However, the industry is undergoing significant restructuring and the companies are at a decisive inflection point. The industry is entering a new dawn. Is the cycle of discontent thus ending?

The following article assesses the nature and existence of commodity super cycles. It analyses the actual resources cycle and attempts to provide guidance to investors as to how to approach the present market environment. It concludes with our finding and conviction that today, we are indeed in a commodity super cycle, that it neither peaked in 2008 nor in 2013 and has not started a downturn. It enters a new phase: a new free cash flow cycle by the industry. The time is ripe to reassess the asset class and its investment case!

The Craton Capital Global Resources Fund offers an ideal investment vehicle for investors to participate from the benefits of the new blueprint in the mining industry.

Executive Summary

- They exist! Historical market data of the last 120 years points to 3 commodity super cycles. Against contemporary perception, the current commodity cycle has the characteristics of a super cycle.
- The initial phase of the current super cycle triggered the biggest investment period in mining in history. This led to unintended cost inflation that capped profits, cash flows and dividends despite higher raw material prices. Fuelled by cost inflation, it tied up significant amounts of capital thus further depressing returns.
- This investment cycle peaked in 2012: expect significant declines in investment volumes over the next 4 years, potentially back to the level where it started. The ensuing cost cycle peaked in Q1'13: the impact thereof to become further visible in forthcoming results. Expect declining costs for at least 2 more years.
- Planned new capacity will come onto the market between now and 2017. Expect the year-over-year supply growth rate to peak between 2014 and 2016 (commodity dependent) and to ebb from 2017.
- Investors already expect a supply glut in 2014/15 and thus falling resources prices. But our analysis indicates that for key commodities, this surplus risk is overrated as the absolute amount of oversupply is not substantially higher than the absolute amount of demand.
- On the back of our (conservative) GDP growth forecasts and the currently underrated rise in absolute demand levels, we believe that commodity prices will have enough underlying support to remain stable.
- The lack of adequate supply from 2017 onward may then lead again to a phase of firming prices.
- Our analysis implies that the foundations are laid for a stronger and longer cycle. Companies are now finally in a position to really lever from it. Expect strongly improved free cash flows and dividend payments from producers from 2014 onward, even under a cautious commodity price scenario.
- We conclude: it is rather unlikely that the cycle peaked in 2008 or that it is yet over. Expect the industry and companies to continue their strategic turnaround thus the cycle of discontent felt by investors in the industry will finally abate.

Introduction

The last three years have been a torrid and testing time for market participants in resources equities. The vast majority of investors abandoned the asset class. The remaining minority appear to be die-hards, brave contrarian investors and short sellers.

The term “Commodity Super Cycle” was often used or misused in recent years, mainly in the context of strong and sustained price increases in a broad basket of commodities (including oil). We observe wide spread denial by various sell-side commodity specialists that a Commodity Super Cycle currently exists. This mind-set, or the change of it, is somehow remarkable as not long ago, the term, established by Goldman Sachs, was commonly used with a view that “this time, it is something special”. Enquiries to us by investors therefore questioned the existence of a “Super Cycle” and many voiced the end of it – if there was one.

The starting point to a better perspective is a top down assessment of the present commodity cycle and trying to answer the current state of it. Is it a super cycle – or not? How should investors approach the actual market environment?

The share price disappointment and frustration about the asset class should not create a misperception that above average returns cannot be achieved in resources equities for years to come.

We are of the view that the time is ripe to re-look at the sector again. History never repeats itself, as Mark Twain famously stated, but it rhymes and there is enough evidence of a sustained strong resources cycle.

Commodity Super Cycles do exist

Whilst references to super cycles for raw materials are a rather scarce occurrence in contemporary investment banking research, historical data provides more guidance. What separates super cycles from normal business cycles (i.e. 5 years) is that they tend to span over a much longer period of time (up to 40 years to complete a full cycle). Assessing available market data for the last 120 years concludes with a clear verdict: super cycles did exist and recent research¹ makes reference to three long lasting upswings, followed by a downward correction that completed the cycle:

First Commodity Super Cycle

1894 - 1932: Emerged on the back of the industrialization of the US. The length of the cycle spanned over 38 years; it peaked in 1917. It can be characterized by its strong upward move followed by a strong downward phase.

Second Commodity Super Cycle

1932 - 1971: Emerged out of the Great Depression and the ruins of the world economic crisis but gained significant momentum from the rebuilding of Europe post World War II (lasted 39 years, peaked in 1951). Again, there was a strong upward phase ensued by a weak downward one.

Third Commodity Super Cycle

1971 - 2001: Due to dollar weakness and oil price shock (30 years with peak in the early 1970's). This cycle can be described by a short and muted upward leg and a strong and prolonged downward phase which was, in our view, accelerated by the collapse of the former Soviet Union as excess materials reached the market, putting additional downward pressure on prices.

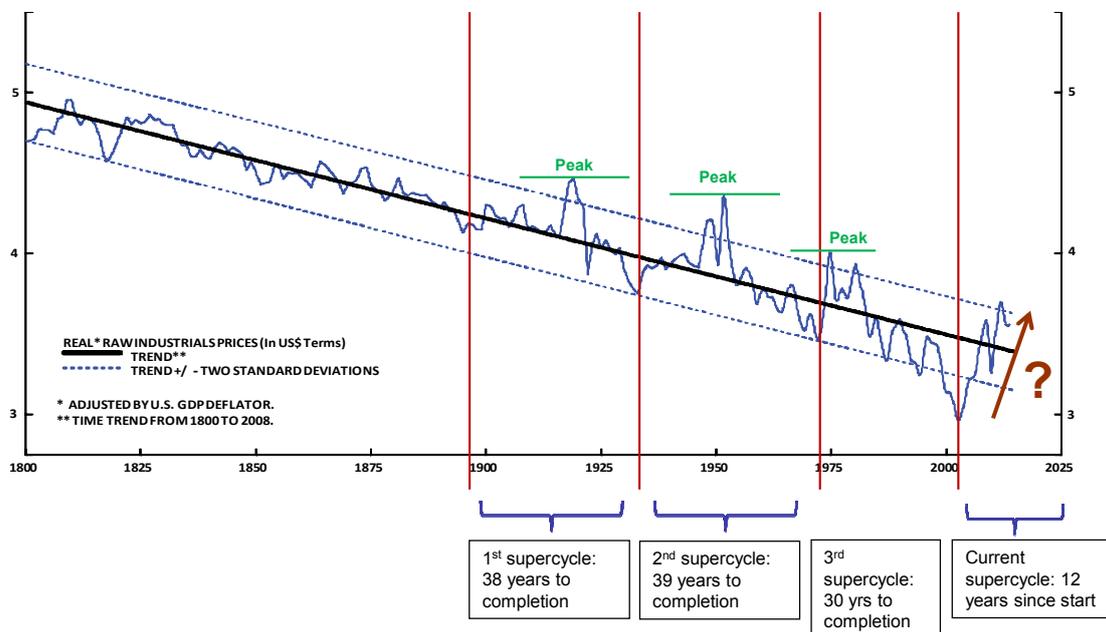
These three historic super cycles revealed common characteristics:

1. The first and second cycles were strongly *demand driven*. They emerged from resurging demand for raw materials during the industrialization of a major economy or, in the case of cycle 2, a group of economies.

¹ United Nations DESA Working Paper No. 110, Erten & Ocampo (Feb 2012)

2. They included a *broad range of commodities*. The demand was driven by a period of increased industrial production hence higher required raw material inputs.
3. These cycles were characterised by extended and *above average commodity demand and price increases*.

Chart 1: Trend of Real Raw Industrial Prices – Super Cycles do exist



Source: BCA, Craton Capital, United Nations DESA Working Paper No. 110 Erten & Ocampo (Feb 2012)

“Previous Super Cycles showed price declines after reaching the peak. The current one does not reflect a significant downturn in prices – is this hinting that the upward trend is intact and has not yet peaked?”

The commodity cycle 2001 to date – has it got the characteristics of a super cycle?

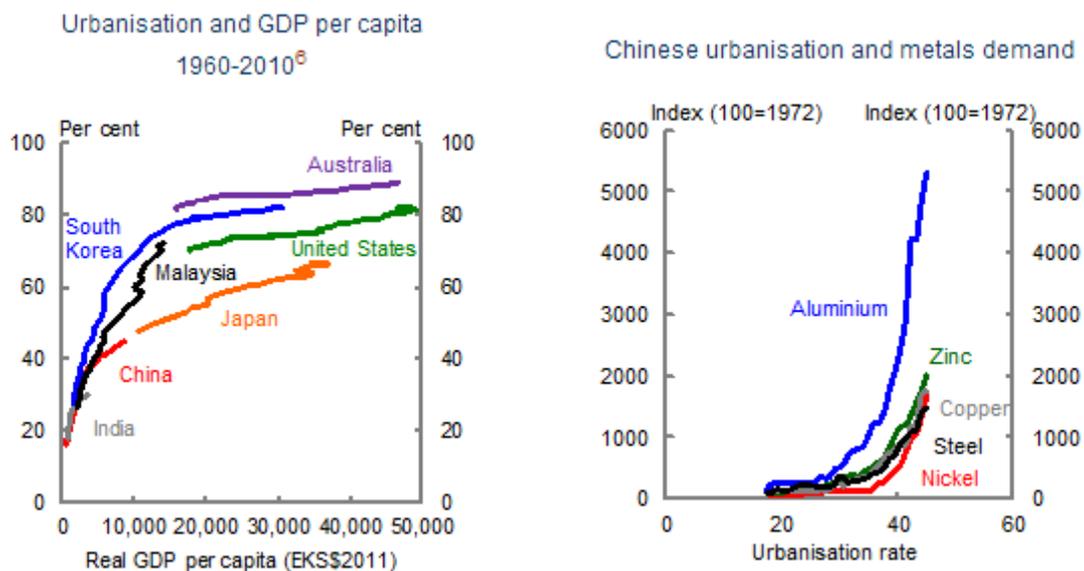
The actual commodity cycle began in 2001. In order to assess its nature, we use some of the common denominators as criteria that defined previous commodity super cycles:

1. The existence of industrialisation and urbanisation trends that especially characterized the cited super cycles 1 and 2
2. The pattern and magnitude of the demand growth – how strong was the correlation between price movements and demand growth?
3. The magnitude of price developments – were the price movements above trend?

What has occurred since 2001?

The start of the cycle was triggered by industrialisation and urbanisation in a number of developing countries which gained momentum from 2001 onward (*super cycle characteristic #1*). Countries which once saw very low GDP per capita and therefore low commodity demand per capita climbed to an above average demand trend (including China and India). We focus on a number of key commodities which are pertinent in the progress of industrialisation (reflected in above average industrial production growth) and urbanisation (which has a multiplier effect on GDP growth). These include copper, steel, iron ore, met coal and zinc which are vital inputs as economies adjust to rising earnings power, standards of living and dietary requirements.

Chart 2: Urbanisation Rate and Demand for Metals



Source: ABARES Australian Commodities; BREE Resources and Energy Statistics 2011; World Steel Association: Steel Statistical Yearbooks, various years; World Metal Statistics, various years; United Nations World Population Prospects: The 2010 Revision; United Nations World Urbanisation Prospects, The 2009 Revision

“Both China and India significantly trail more developed countries in both urbanisation and commodity consumption per capita – There is lots of ground to make up.”

Table 1 indicates demand growth since 2001 for these various commodities. It clearly shows that the industrialisation trend led to significant demand growth for raw materials (*super cycle characteristic #2*), with China leading the way. The supply levels provided by the industry at the time were incapable of meeting the expected longer term growth in demand. This catalysed a broad based commodity price ramp up. At the same time shareholders started to increase pressure on producers to add and increase capacity.

Table 1: Aggregated Commodity Demand Growth pre and post Global Financial Crisis (GFC)

DEMAND	Copper	Aluminium	Thermal Coal	Lead	Nickel	Steel HR	Zinc	Iron Ore	Met Coal
2001 - 2008	21%	55%	51%	40%	15%	54%	25%	65%	18%
2008 - 2013F	15%	32%	48%	17%	46%	16%	19%	26%	7%

Source: BMO, Bloomberg, Craton Capital

“Across the spectrum of commodities, no decline in demand materialised to date, which defies expectation of a halt in demand post GFC.”

Table 2: Commodity Demand Growth annualized pre and post GFC and Forecast Period

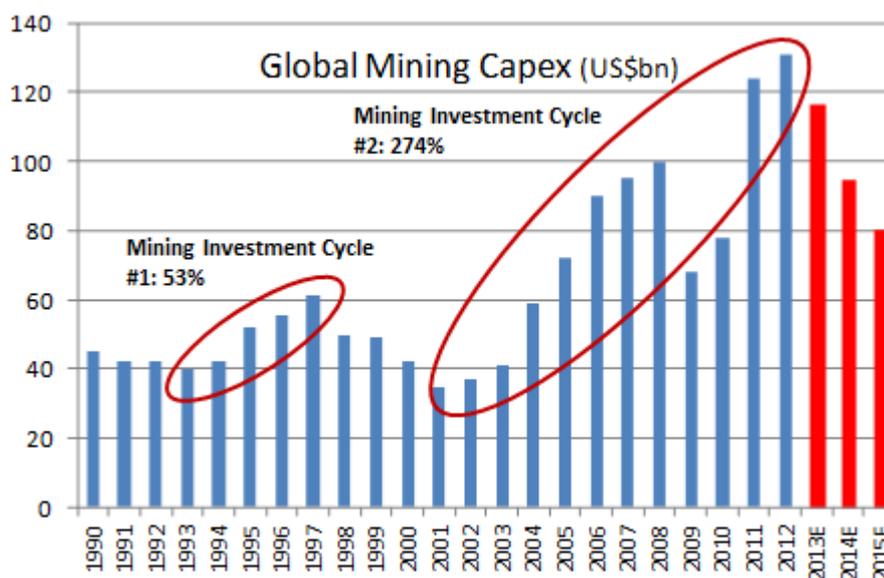
DEMAND GROWTH ANNUALISED	Copper	Aluminium	Thermal Coal	Nickel	Steel HR	Zinc	Iron Ore	Met Coal
2001 - 2008	3%	6%	6%	2%	6%	3%	7%	2%
2008 - 2013	3%	6%	8%	8%	3%	4%	5%	1%
2013 - 2017	4%	4%	3%	5%	3%	4%	3%	2%

Source: BMO, Bloomberg, Craton Capital

“Expected demand growth, shown in table 2, is based on conservative economic growth forecast. We see upside risk to these numbers.” (Please see the tables in the appendix revealing the growth expectations)

Mining companies – still haunted by the bad experiences of the last short commodity cycle in the 1990’s - initially appeared sceptical towards the price rally and its sustainability. They were therefore reluctant to meet the strong demand growth by planning new supply. Producers initially reacted with a rush to acquire additional production capacity. In 2004 the supply side finally started to respond in earnest which accelerated the new mining investment cycle. Essentially, company management bowed to shareholder pressure and felt threatened by the increased activity and presence of both Chinese and Indian commodity producers in their own traditional backyards. The biggest and longest investment phase in modern history started.

Chart 3: Global Mining Capex Investment Cycle



Source: UBS, Raw Materials Group, Craton Capital

“The mining sector is now exiting this record investment cycle. This will limit continued supply growth.”

The strong underlying fundamentals triggered significant price growth between 2001 and 2008. Resource prices increased triple-digit in real terms relative to the levels in 2001. This occurred across many commodities and was not isolated to one specific metal (*super cycle characteristics #2 and #3*). The outbreak of the Global Financial Crisis in 2008 then abruptly interrupted this phase of the cycle. There was a sharp price drop across commodities as capital markets went into a state of cardiac arrest.

Table 3: Commodity Price Changes pre and post GFC

PRICE	Copper	Aluminium	Thermal Coal	Lead	Nickel	Steel HR	Zinc	Iron Ore	Met Coal
Jan 2001 - July 2008	343%	71%	489%	377%	163%	329%	88%	685%	476%
July 2008 - Oct 2013	-13%	-36%	-51%	-2%	-20%	-40%	4%	-5%	-41%

Source: World Bank, Bloomberg, BMO

“The GFC broke the upward trend across commodity prices but the decline is not commensurate with the downward phase in previous super cycles – prices are now trading within a range.”

We note:

The commodity cycle that started in 2001 showed until 2008 all the characteristics of a super cycle:

- The upswing included a broad range of raw materials and the move in its entirety was clearly above trend.

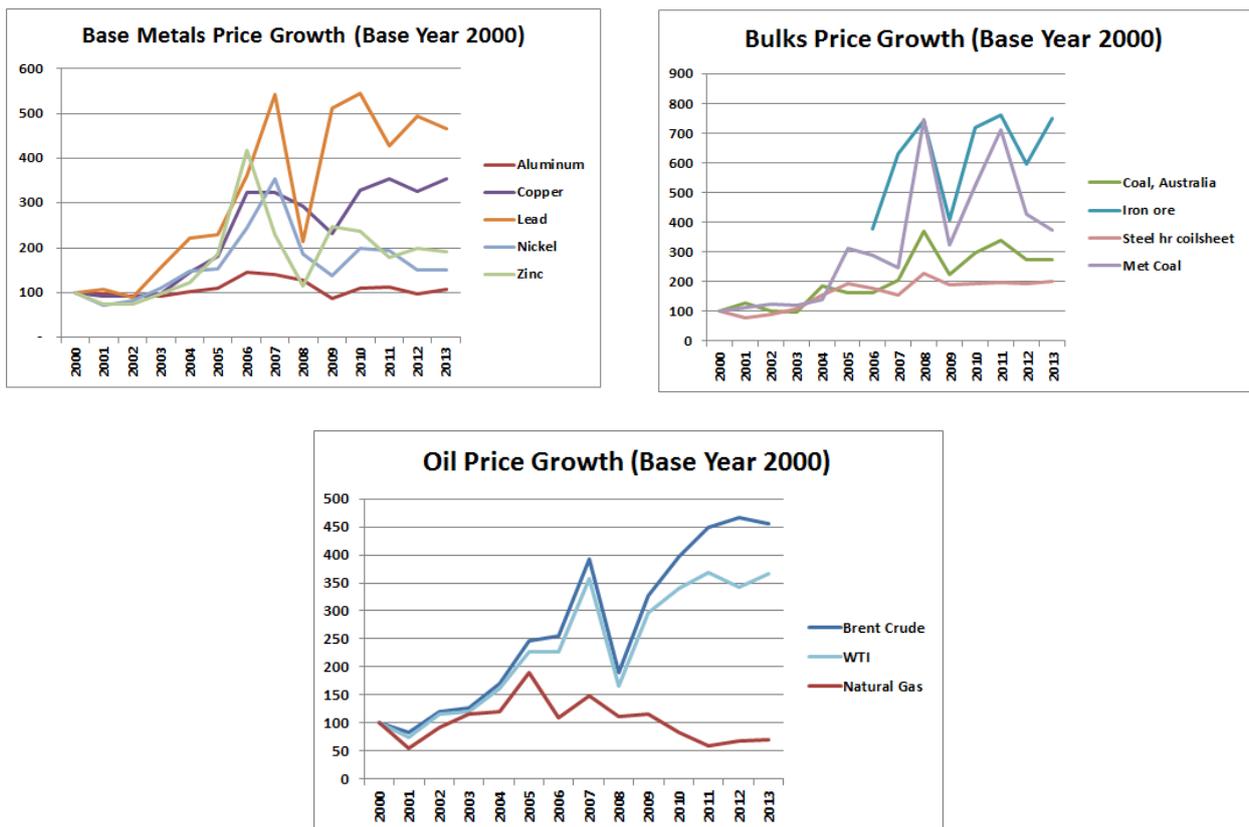
- There has been a strong and maintained relationship between commodity prices and global demand growth. Global economic growth, between 2002 and 2007, was the strongest and longest since the mid 1970's.
- Similarities do exist to the first and second commodity super cycles. Whilst the first was fuelled by the industrialisation of the United States, the second was underpinned by the reconstruction of major economies post WW2. The current super cycle is supported by the industrialisation and urbanisation of a large number of developing economies.

Has the current Commodity Super Cycle peaked? How did the GFC of 2008 impact resources?

Most resources prices peaked in mid-2008, coinciding with the full outbreak of the global financial melt-down. The GFC in 2008 provided a roadblock to the world economy and to the commodity price complex. Markets were fearful as they expected a plummeting demand thus prices declined in anticipation of a “world economic ice age.”

However, this scenario never materialized. Both demand as well as commodity prices started to recover surprisingly fast. Whilst annualized demand growth started soon to follow a similar trend to the one before 2008 (i.e. for copper, aluminium, coal, nickel, iron ore, steel etc.), raw material prices established a consolidation pattern which are portrayed in charts 4 and 5.

Chart 4: Commodity Price Trend 2000 – 2013



Source: World Bank, Bloomberg, BMO

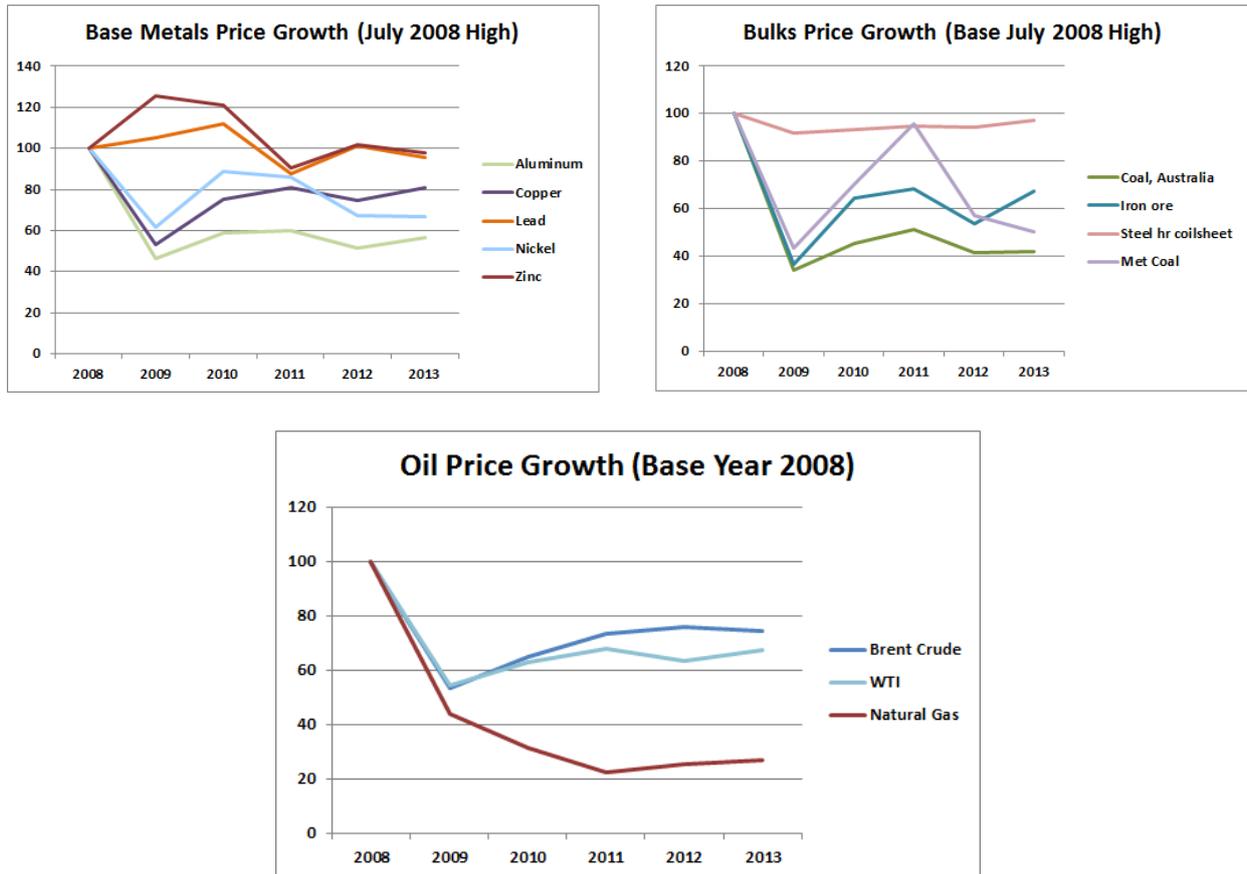
“Barring natural gas, commodity prices continue to hold above the 2000 levels, suggesting that the cycle has not commenced a downturn.”

To conclude that the peak in the commodity price basket in 2008 marked the peak of the super cycle is in our view premature. Periods of high volatility were not uncommon in previous super cycles and often ac-

companied the long term trend. Therefore, a strong argument can be made that 2008 was not a definite turning point in the cycle. It was rather the accumulation of various high impact events such as:

- The near collapse of the inter-banking market in late 2008 forced many manufacturers to sell down inventories across the entire range of raw materials to stay financially afloat.
- Speculators were forced to sell their positions due to margin calls by their respective prime brokers.
- The collapse, or near collapse, of important market participants (i.e. Lehman Brother’s) accelerated the downward pressure for the raw materials complex.

Chart 5: Commodity Price Trend from peak, reached in July 2008, just prior to GFC



Source: World Bank, Bloomberg, BMO

“Positive demand growth is providing support for commodity prices post the initial drop after the GFC.”

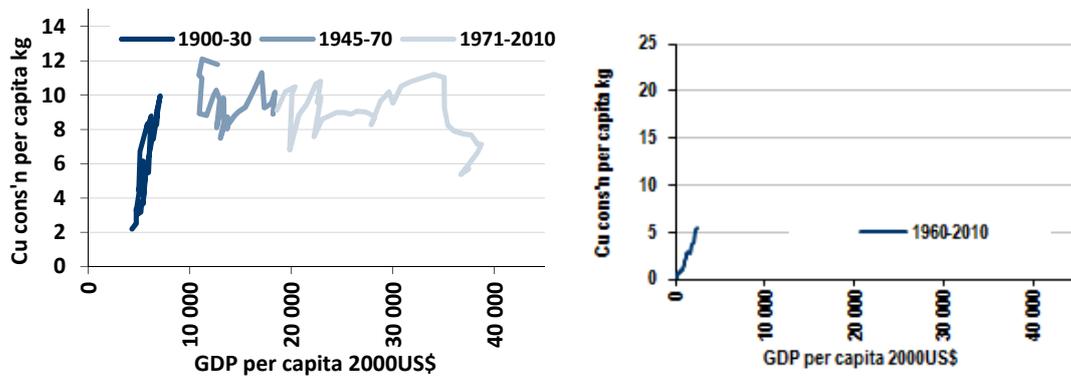
Findings:

There is no strong indication that the upward price trend for a basket of commodities has been broken or that the cycle has peaked since 2008. History reveals that price fluctuations or consolidations formed an integral part of previous super cycles. Prices initially dropped in 2008 then recovered with the support of continuing strong demand levels. Lately commodity prices fluctuate within a range as opposed to a strong decrease as would be expected in the downward trend of a cycle.

This can be explained as the anticipated “doomed” demand levels never materialised. We instead observe that demand resumed a positive growth trend post 2008. This is because of higher absolute demand levels. Therefore, the most plausible explanation to counter the expected negative trend is that urbanisation and industrialisation in developing countries have not been halted nor reversed by the Great Financial Crisis, or the subsequent European Debt Crisis.

The developing world has seen significant economic progress since 2001 and many indicators guide to further robust growth, at least on a relative basis. It won't be a linearly paced development. However, on a comparable basis the mature economies remain a distant follower to the comparative data from developing markets (illustrated in charts 6 to 8, depicting China as an example). Global GDP and IP growth rates will be increasingly driven by the higher weight of developing countries. Commodity prices, in particular metal prices, have a much higher correlation to world GDP growth than to OECD GDP growth (0.73 vs 0.61)².

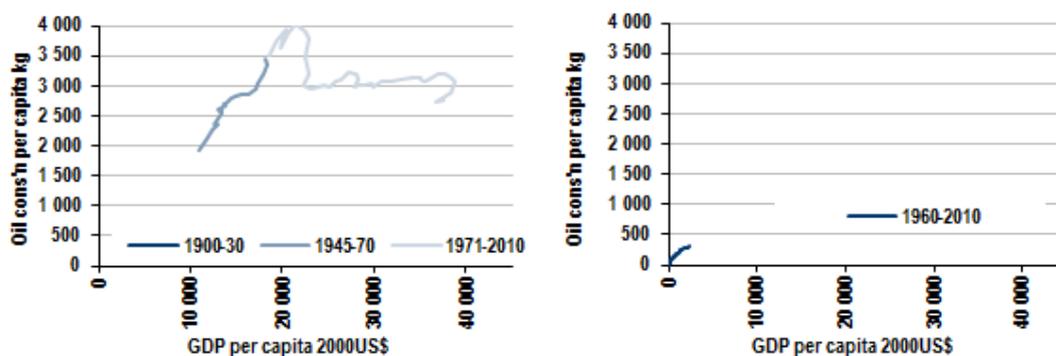
Chart 6: Intensity of US Copper Consumption usage vs China



Source: Bloomberg, Brook Hunt, United Nations, World Bank

“Using copper as a proxy, China (RHS) remains significantly behind the US (LHS) in positioning in the industrialisation cycle, therefore suggesting the significant potential in increased commodity demand from China to reach developed country levels.”

Chart 7: Intensity of US Oil Consumption usage vs China



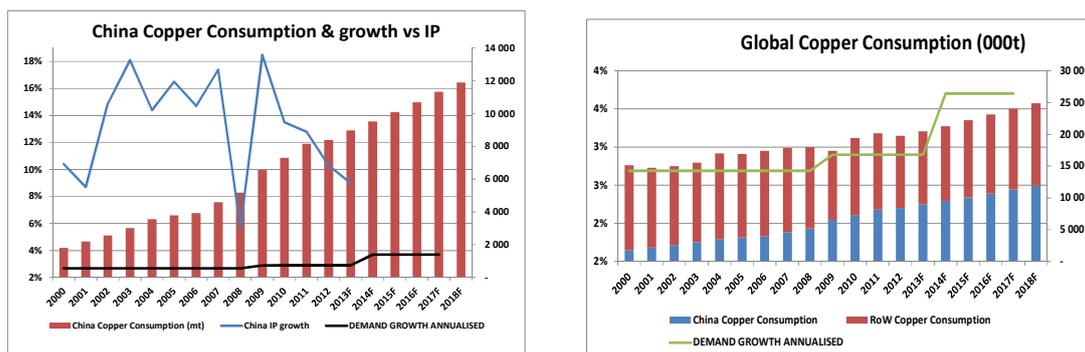
Source: Bloomberg, Brook Hunt, United Nations, World Bank

“As the Chinese urbanisation levels increase and per capita earnings power rises, China will likely increase oil consumption.”

We support the view that there is a strong probability for developing economies to further narrow the gap to OECD per capita consumption standards (please note that we do not argue closing the gap!). Therefore one could expect above-average demand growth for various commodities going forward. Please note that, despite the GFC, the European Debt Crisis and the threat of a widespread recession, the absolute volume of commodity consumption by China (leading consumer of most commodities) never decreased over this period and has continued on an upward trend on both an absolute and annualised growth level.

² United Nations DESA Working Paper No. 110 Erten & Ocampo (Feb 2012)

Chart 8: China - Copper Consumption and Growth



Source: Bloomberg, World Bank, Macquarie Securities

“China commodity demand growth continues full steam ahead with annual growth rate growing consistently on both an absolute and percentage basis.”

To turn the focus to the miners: Are commodities producers at an inflexion point?

As a result of the newly built capacity, various commodities appear to be in an oversupply situation over the next three years. This expected oversupply though might be of short term or temporary nature. We note that various companies and research houses already flagged the possibility of certain metals turning into a deficit as early as 2014 (e.g. zinc, nickel).

Why the potentially temporary nature? The game changer started to emerge this year. The investment cycle for the global mining industry peaked in 2012 (please see again chart 3). Based on the available information provided by the companies, the planned investment expenditure for new capacity across the board will see a substantial decline over the next four years.

Miners were confronted with mounting discontent from shareholders. They started to implement changes in management and strategies. Nearly all of the world’s largest producers have changed their top management over the last 18 months. Old and new management alike execute a strategic U-turn and focus now strongly on costs reduction, improved implementation, increased project returns and less capital expenditure. They also reduced new planned capacity for years to come.

The impact on new supply is significant. The mining industry can be characterized by high capital intensity and long lead times. Existing and new production can be accurately predicted over a period of many years, using publicly available information. We reckon that the supply numbers for the next 5 years are relatively precise. For example, it is unreasonable to expect a new source of copper supply suddenly materializing – firstly, the deposit needs to be found and secondly, the mine has to be built. If there is a risk to this forecast, then it is rather pointing to less supply than expected.³ Mining is technical, process driven and exposed to weather. Labor unrests are common and political interference can happen.

The strategic repositioning of the industry will become visible from 2016/2017 onwards. 2014 to 2016 is marked by peak supply growth for a broad range of commodities though the timing differs slightly: iron ore peak growth is expected in 2014 whereas the one for copper is estimated to peak in 2015 and zinc implies a flat growth pattern. *The common factor is the ebbing supply in 2016/2017 across the board.* Again, this is not because of inaccurate data, it is a function of current capital austerity. The rapid decline of investments to construct new supply will become apparent in less than 5 years’ time.

³ The disruption per annum in copper since 2004 has been 6% of planned capacity. Our base scenario reflects a 3-4% disruption margin only.

The demand side

The appendix provides our reader with an overview of demand data across various key commodities, past and future. The predictions are based on forecasts provided by the economist team of the Bank of Montreal, the IMF and CRU. Demand forecasts strongly correlate with the underlying GDP numbers and Craton has chosen a conservative approach to its scenario planning. This risks to potentially, or most likely, understate future consumption numbers. Our scenario foresees:

1. Global GDP growth not to exceed 3.4% in 2014 and 3.6% between 2015 and 2017
2. US growth to peak in 2015 and slow to a pedestrian 2% in 2016 and 2017
3. Growth in China to have peaked in 2012, and to gradually decline into 2017 (to 6%)
4. Japan, currently the 3rd biggest economy, still to stagnate (1.1% growth 2015 – 2017)
5. Eurozone to muddle through but not more (1.5% growth between 2015 - 2017)

The resulting expected annualized demand growth for various raw materials for 2013 to 2017 is lower than for the periods 2001 to 2008 and 2009 to 2013. It would negate as well one important super cycle criteria, above average consumption growth. We encourage the reader to view these conservative consumption predictions in the context of slowing supply growth. Any upside divergence (i.e. China, US, Japan or Global GDP) will substantially narrow the surpluses or even push various raw materials into a deficit situation. We therefore see a high probability that on the back of our conservative growth forecasts, commodity prices will have enough underlying support to remain stable and not to start declining. There also remains a high chance that any upside to consumption will lead to a firmer price environment.

The tapering off of the supply growth in 2016/2017 will put producers and markets into a dilemma, similar to 2001. Where is the additional supply coming from for the 2020's? The mining investment cycle is entering a downward trend and there is no evidence that the new strategic approach will be reversed, it only just started. Once producers reassess the situation in 3 to 4 years' time, it could take another 7 to 10 years for significant supply growth to materialize. These are coming constraints. This may well lead to another upward move in this commodity super cycle that started in 2001. It is rather the question *when*, not *if*.

The "*when*" depends strongly on the magnitude of Global GDP growth, particularly on the one in developing economies. We formed our view with the assumption of a low growth scenario. But the continuous rise in absolute demand levels implies that new capacity and production will be needed in a few years' time, particularly after 2017.

The industry just exited the biggest investment cycle in history and is undergoing a process of digestion and austerity. This is the reality. The capacity brought to the market is creating a short-term but already expected overhang. Applying a longer term view though, this capacity might well be too low. The intensity of the next upward leg in the commodity super cycle should not be underestimated, our assessment points to stronger for longer.

To summarize:

- Three commodity super cycles did exist between 1894 and 2001.
- The actual commodity cycle that started in 2001 has all the characteristics of a commodity super cycle.
- A broad based and strong increase of commodity prices accompanied by sustained strong demand triggered the biggest investment cycle in modern industrial history. New capacity is not available by the push of a button as it takes 6 to 10 years to bring a new facility into production. This new supply from the investment cycle is introduced to the market only since 2011/12 and will ebb after 2016.
- Based on the assessment of super cycle characteristics, there is not enough evidence that the cycle has peaked yet: the industrialisation and urbanisation trend in a large sample of economies is continuing although not at the same rapid pace as over the last 10 years.

- Our base case scenario sees global GDP to grow 3.4% in 2014 and 3.6% in 2015/16 (please see the appendix for the breakdown of major economies). This implies lower real growth rates for the next four years for a broad range of commodities, implying upside if global GDP increased more than expected though.

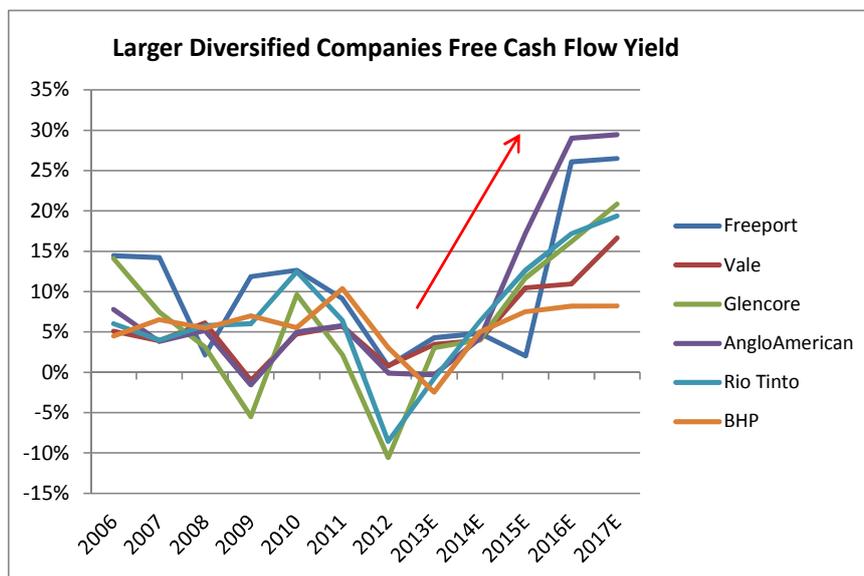
Looking beyond the challenges of today: past the cycle of discontent

We started this report with the reference that the investment case for resources equities deserves renewed attention. 2013/2014 will mark a watershed moment for this currently unloved and besieged industry. A variety of inflection points will lead to far reaching consequences and could realign the broken relationship between companies and shareholders:

1. The peak of the investment cycle in 2012
2. The peak of the cost cycle in 2013
3. The start of the free cash flow cycle as from 2014 even assuming muted commodity prices

The first decisive inflection point is the peak of the capital cycle in 2012. It will free up capacity on all fronts and unfolds deflationary forces that will positively impact all cost categories in the mining life cycle of a company. The cost cycle follows the investment cycle and we observe that costs within the industry have peaked in the first quarter of 2013. We expect further cost reductions in 2014, 2015 and beyond which should enable producers to first protect and then expand again operating margins. Less capital commitments means less financial capacity tied up and will result in strongly improved free cash flow generation.

Chart 9: Free Cash Flow Yield of Larger Diversified Companies

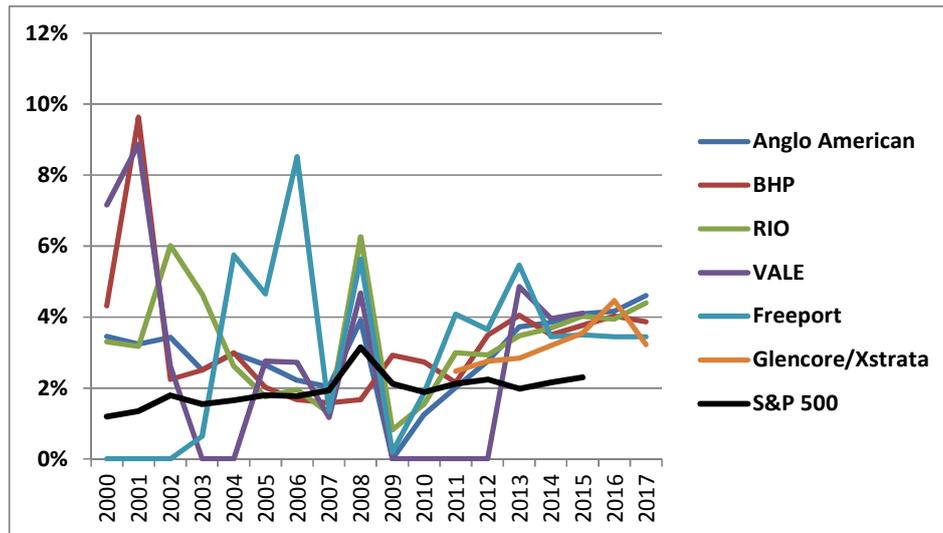


Source: RBC Capital, Bloomberg, Craton Capital

“Based on our (conservative) assumptions, there is significant risk to the upside.”

The execution of the strategic restructuring throughout the industry will provide additional tailwind to lever from declining costs and less capital spent. 2014 to 2016 will be marked by peak supply growth but this should not materially impact the strongly improved economics of the companies. Free cash flow yields are expected to improve substantially even under cautious commodity price scenarios (please see chart 9). The upward trend should continue into 2016/2017. Companies will also have to respond to the call by shareholders for improved and sustainable dividend payments (please see chart 10). This was expressed as an imperative expectation.

Chart 10: Dividend Yield Ratio of Larger Diversified Companies



Source: Bloomberg, Craton Capital

“Following strong shareholder pressure, dividend yields are expected to remain strong into the forecast period, exceeding that of the general market (ceteris paribus).”

The scenario of high free cash flow yields and above average dividends yields should materialize without the support of broad based commodity price increases. The next upward leg of the commodity super cycle is neither a requirement nor a condition for this but remains a possibility that will provide additional tailwind. As it stands, any scenario post 2017 is open for debate. The ebbing supply would suggest that the industry could embark on a new investment cycle as additional capacity will be desperately needed to satisfy the ever growing demand into the 2020’s and beyond but some caution is warranted.

Will the new emerging trend to mining austerity and capital discipline prevail longer and delay the producer’s response? The planning for the additional output of raw materials for 2020’s should start to take shape now. But this is the furthest thing on a CEO’s mind at the moment. He would be tarred, feathered and chased out of the boardroom into the next shaft, the shaft then be locked and the key thrown away into a distant sinkhole, if one follows popular shareholder sentiment! In absence of such a woeful scenario, the stage is set for an extended period of high free cash flows. Investors have been waiting for this for many years and their patience has waned. They may now get what they were asking for, and more.

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APPENDIX
Table 1: Copper Supply / Demand situation based on low-road GDP assumptions

Copper Supply-Demand		2000A	2001A	2002A	2003A	2004A	2005A	2006A	2007A	2008A
Global Supply	kt	14,844	15,656	15,351	15,277	15,935	16,595	17,296	18,025	18,260
y-o-y change	%		5.5%	-1.9%	-0.5%	4.3%	4.1%	4.2%	4.2%	1.3%
Global Consumption	kt	15,120	14,930	14,961	15,581	16,927	16,754	17,331	17,900	18,039
y-o-y change	%		-1.3%	0.2%	4.1%	8.6%	-1.0%	2.6%	3.8%	0.8%
Surplus (Deficit)	kt	-277	726	390	-304	-992	-159	-35	125	221
Global Inventory	kt	841	1,566	1,956	1,652	661	502	467	592	812

Copper Supply-Demand		2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global Supply	kt	18,291	18,977	19,684	20,218	20,723	21,623	22,838	23,516	24,122
y-o-y change	%	0.2%	3.8%	3.7%	2.7%	2.5%	4.3%	5.6%	3.0%	2.6%
Global Consumption	kt	17,362	19,306	19,747	19,697	20,673	21,592	22,463	23,156	23,882
y-o-y change	%	-3.8%	11.2%	2.3%	-0.3%	5.0%	4.4%	4.0%	3.1%	3.1%
Surplus (Deficit)	kt	930	-329	-63	521	49	31	375	360	239
Global Inventory	kt	1,742	1,413	1,350	1,871	1,921	1,952	2,327	2,687	2,926

GDP Asssumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU

Copper: After reaching peak YoY growth in 2015, annual copper supply growth is expected to taper off towards 2017 while demand growth will remain steady, utilising prudent low-road GDP estimation

Table 2: Iron Ore Supply / Demand balance remains in under-supply in near term

Iron Ore		2000A	2001A	2002A	2003A	2004A	2005A	2006A	2007A	2008A
Global Supply	Mt	930	988	1,055	1,145	1,298	1,422	1,458	1,608	1,600
y-o-y change	%		6.3%	6.8%	8.5%	13.3%	9.6%	2.5%	10.3%	-0.6%
Global Consumption	Mt	997	1,004	1,052	1,152	1,270	1,383	1,523	1,681	1,653
y-o-y change	%		0.7%	4.8%	9.6%	10.2%	8.9%	10.2%	10.4%	-1.7%
Surplus (Deficit)	kt	-67	-16	3	-7	28	40	-65	-73	-53

Source: BMO

Iron Ore		2009A	2010A	2011A	2012A	2013E	2014E	2015E	2016E	2017E
Global Supply	Mt	1,481	1,785	1,874	1,926	1,979	2,141	2,222	2,339	2,421
y-o-y change	%	-7.4%	20.5%	5.0%	2.8%	2.7%	8.2%	3.8%	5.3%	3.5%
Global Consumption	Mt	1,610	1,814	1,927	2,014	2,085	2,160	2,230	2,306	2,372
y-o-y change	%	-2.6%	12.7%	6.2%	4.5%	3.5%	3.6%	3.3%	3.4%	2.8%
Surplus (Deficit)	kt	-129	-30	-53	-88	-107	-19	-8	33	49

GDP Assumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU

Iron Ore: Remains strong fundamentally into 2015 with supply deficit but big producers gearing to expand supply. However, this is likely to be slow under the low capex investment regime providing support for iron ore price

Table 3: Met Coal Supply / Demand balance remains in marginal over-supply situation

Global Met Coal		2005A	2006A	2007A	2008A	2009A	2010A
Global Supply	Mt	754	790	831	858	845	983
y-o-y change	%		4.8%	5.2%	3.3%	-1.5%	16.2%
Global Consumption	Mt	674	708	742	744	765	812
y-o-y change	%		5.0%	4.9%	0.3%	2.8%	6.2%
Surplus (Deficit)	kt	80	82	89	114	81	171

Global Met Coal		2011A	2012E	2013E	2014E	2015E	2016F	2017F
Global Supply	Mt	1,062	1,088	1,110	1,162	1,208	1,231	1,250
y-o-y change	%	8.1%	2.4%	2.0%	4.7%	3.9%	1.9%	1.6%
Global Consumption	Mt	917	928	959	991	1,019	1,053	1,083
y-o-y change	%	12.9%	1.1%	3.3%	3.4%	2.8%	3.3%	2.8%
Surplus (Deficit)	kt	145	160	151	171	189	177	167

Seaborne Met Coal		2005A	2006A	2007A	2008A	2009A	2010A
Seaborne Supply	Mt	192	201	208	221	203	272
y-o-y change	%		4.7%	3.3%	6.5%	-8.0%	34.0%
Seaborne Consumption	Mt	191	198	202	188	188	198
y-o-y change	%		3.5%	1.7%	-6.9%	0.4%	5.2%
Surplus (Deficit)	kt	1	3	6	33	15	74

Seaborne Met Coal		2011A	2012E	2013E	2014E	2015E	2016F	2017F
Seaborne Supply	Mt	267	287	299	328	357	365	369
y-o-y change	%	-1.9%	7.6%	3.9%	10.0%	8.5%	2.3%	1.2%
Seaborne Consumption	Mt	227	236	268	284	301	323	340
y-o-y change	%	14.2%	4.1%	13.6%	5.8%	6.2%	7.2%	5.2%
Surplus (Deficit)	kt	41	51	30	45	55	42	29

Source: World Bank, Eurostat, BMO, IMF, CRU

Met Coal: The market expects this market to remain well stocked over the forecast period to 2017 however we are likely to see a tapering off of supply growth both globally and for seaborne product

Table 4: Steel Supply / Demand grows at steady rate over forecast period

Steel		2000	2001	2002	2003	2004	2005	2006	2007	2008
Supply	Mt	848	850	903	969	1,062	1,145	1,248	1,347	1,341
y-o-y change	%		0.3%	6.2%	7.3%	9.6%	7.8%	9.0%	7.9%	-0.4%
Demand	Mt	843	854	911	974	1,061	1,136	1,238	1,317	1,319
y-o-y change	%		1.3%	6.7%	6.9%	8.9%	7.0%	9.0%	6.4%	0.1%
Surplus (Deficit)	kt	5	-3	-8	-5	1	9	10	30	22

Steel		2009	2010	2011	2012	2013E	2014E	2015E	2016E	2017E
Supply	Mt	1,232	1,430	1,515	1,542	1,596	1,643	1,679	1,729	1,780
y-o-y change	%	-8.2%	16.1%	5.9%	1.8%	3.5%	3.0%	2.2%	3.0%	3.0%
Demand	Mt	1,219	1,400	1,484	1,494	1,527	1,567	1,609	1,654	1,700
y-o-y change	%	-7.6%	14.8%	6.0%	0.6%	2.3%	2.6%	2.7%	2.8%	2.8%
Surplus (Deficit)	kt	13	31	31	49	68	76	70	75	80

GDP Assumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU, Macquarie

Steel: Steel production remains robust in China with mills continuing to purchase raw materials (likely commencing restocking for winter). We expect the steel market to continue to trend at flat demand and supply levels but with marginal over supply

Table 5: Zinc Supply / Demand likely to surprise to the upside due to slow supply replenishment

Zinc Supply-Demand		2000A	2001A	2002A	2003A	2004A	2005A	2006A	2007A	2008A
Global Supply	kt	8,959	9,301	9,665	9,911	10,174	10,128	10,500	11,174	11,487
y-o-y change	%		3.8%	3.9%	2.5%	2.7%	-0.5%	3.7%	6.4%	2.8%
Global Consumption	kt	8,984	8,951	9,274	9,634	10,289	10,611	11,159	11,436	11,201
y-o-y change	%		-0.4%	3.6%	3.9%	6.8%	3.1%	5.2%	2.5%	-2.1%
Surplus (Deficit)	kt	-25	350	391	277	-114	-483	-659	-263	285
Global Inventory	kt	1,644	1,994	2,385	2,663	2,548	2,065	1,406	1,144	1,429

Zinc Supply-Demand		2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global Supply	kt	11,175	12,715	13,018	12,512	13,440	14,129	14,775	15,341	16,130
y-o-y change	%	-2.7%	13.8%	2.4%	-3.9%	7.4%	5.1%	4.6%	3.8%	5.1%
Global Consumption	kt	10,141	11,713	12,603	12,747	13,339	13,994	14,532	15,005	15,443
y-o-y change	%	-9.5%	15.5%	7.6%	1.1%	4.6%	4.9%	3.8%	3.3%	2.9%
Surplus (Deficit)	kt	1,034	1,002	415	-235	101	135	242	336	686
Global Inventory	kt	2,463	3,465	3,880	3,645	3,747	3,881	4,124	4,460	5,146

GDP Assumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU

Zinc: Expected to remain a tight market over the next 2 years as significant mines shutdown at end of life. Certain brokers and industry players continue to forecast a supply deficit to 2017 due to lack of new capacity replacing closing mines

Table 6: Aluminium Supply / Demand outlook remains dire

Aluminium Supply-Demand		2000A	2001A	2002A	2003A	2004A	2005A	2006A	2007A	2008A
Global Supply	kt	24,441	24,330	25,986	27,946	29,814	31,863	33,634	38,092	40,052
y-o-y change	%		-0.5%	6.8%	7.5%	6.7%	6.9%	5.6%	13.3%	5.1%
Global Consumption	kt	25,235	24,249	25,636	27,931	30,114	32,048	34,483	38,159	37,542
y-o-y change	%		-3.9%	5.7%	9.0%	7.8%	6.4%	7.6%	10.7%	-1.6%
Surplus (Deficit)	kt	-794	81	349	14	-300	-185	-849	-67	2511
Global Inventory	kt	1,340	1,421	1,770	1,785	1,484	1,299	450	383	2,893

Aluminium Supply-Demand		2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global Supply	kt	37,502	42,254	45,611	47,438	49,472	52,007	54,615	56,837	59,003
y-o-y change	%	-6.4%	12.7%	7.9%	4.0%	4.3%	5.1%	5.0%	4.1%	3.8%
Global Consumption	kt	35,014	40,451	44,212	46,623	49,515	51,879	54,308	56,537	58,715
y-o-y change	%	-6.7%	15.5%	9.3%	5.5%	6.2%	4.8%	4.7%	4.1%	3.9%
Surplus (Deficit)	kt	2,489	1,803	1399	816	-43	128	307	300	288
Global Inventory	kt	5,382	7,185	8,583	9,399	9,356	9,485	9,792	10,092	10,380

GDP Assumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU

Aluminium: The fundamentals of aluminium are not expected to change in our forecast period with over supply remaining a key concern while warehouse legislation looks to contain inventory build-up of this commodity

Table 7: Nickel Supply / Demand likely to develop into a deficit balance

Nickel Supply-Demand		2000A	2001A	2002A	2003A	2004A	2005A	2006A	2007A	2008A
Global Supply	kt	1 114	1 161	1 186	1 219	1 269	1 283	1 328	1 431	1 388
y-o-y change	%		4.2%	2.2%	2.8%	4.1%	1.1%	3.5%	7.7%	-3.0%
Global Consumption	kt	1 112	1 113	1 168	1 239	1 284	1 260	1 383	1 395	1 288
y-o-y change	%		0.1%	5.0%	6.1%	3.6%	-1.9%	9.8%	0.9%	-7.7%
Surplus (Deficit)	kt	2	48	18	-20	-14	23	-54	36	100
Global Inventory	kt	271	319	337	317	303	326	272	308	408

Nickel Supply-Demand		2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global Supply	kt	1 346	1 489	1 668	1 815	1 925	2 052	2 158	2 220	2 219
y-o-y change	%	-3.0%	10.6%	12.1%	8.8%	6.0%	6.6%	5.1%	2.9%	0.0%
Global Consumption	kt	1 325	1 542	1 656	1 722	1 872	1 978	2 079	2 182	2 283
y-o-y change	%	2.9%	16.3%	7.4%	4.0%	8.7%	5.7%	5.1%	4.9%	4.6%
Surplus (Deficit)	kt	21	-53	12	93	53	74	78	38	-64
Global Inventory	kt	429	376	388	481	534	608	686	724	660

GDP Assumption	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, BMO, IMF, CRU

Nickel: Price remains under pressure however and not likely to see a recovery in the near term. Supply growth trend downwards in response to this to 0% growth in 2017 which is in line with brokers and industry players expecting a supply deficit to materialise.

Table 8: Thermal Coal Supply / Demand balance expected to tighten

Seaborne Thermal Coal		2000	2001	2002	2003	2004	2005	2006	2007	2008
Global Supply	Mt	348	392	396	441	475	500	561	576	584
y-o-y change	%		12.5%	1.1%	11.4%	7.6%	5.4%	12.1%	2.7%	1.4%
Global Consumption	Mt	342	385	388	431	466	495	558	579	581
y-o-y change	%		12.5%	0.7%	11.2%	8.0%	6.3%	12.7%	3.8%	0.2%
Surplus (Deficit)	Mt	6	7	8	10	9	5	3	-4	3

Seaborne Thermal Coal		2009	2010	2011	2012	2013F	2014F	2015F	2016F	2017F
Global Supply	Mt	617	674	743	834	872	902	943	984	1,007
y-o-y change	%	5.6%	9.3%	10.3%	12.3%	4.5%	3.4%	4.5%	4.4%	2.3%
Global Consumption	Mt	630	674	739	826	862	895	925	958	989
y-o-y change	%	8.6%	6.9%	9.7%	11.8%	4.4%	3.8%	3.4%	3.5%	3.2%
Surplus (Deficit)	Mt	-14	0	4	8	10	7	17	26	18

GDP Assumptions	2009A	2010A	2011A	2012A	2013f	2014f	2015f	2016f	2017f
Global	-2.3%	4.0%	3.0%	3.2%	3.0%	3.4%	3.6%	3.6%	3.6%
U.S.	-3.5%	3.0%	3.0%	2.2%	1.6%	2.6%	3.0%	2.0%	2.0%
China	9.2%	10.4%	3.0%	7.8%	7.4%	7.0%	6.8%	6.5%	6.0%
Eurozone	-4.5%	2.0%	1.7%	-0.3%	-0.5%	0.8%	1.1%	1.5%	1.5%
Germany	3.7%	4.2%	3.0%	0.9%	0.6%	1.8%	1.5%	1.5%	1.5%
Japan	-6.3%	4.0%	3.0%	1.9%	1.7%	1.3%	1.1%	1.1%	1.1%
India	8.5%	10.5%	6.3%	4.9%	4.8%	5.0%	5.5%	6.0%	6.5%
Brazil	-0.3%	7.5%	2.7%	1.5%	2.4%	3.0%	3.5%	3.5%	3.5%
Russia	-7.8%	4.5%	4.3%	3.4%	1.8%	3.0%	3.3%	3.3%	3.3%

Source: World Bank, Eurostat, Macquarie

Thermal Coal: The outlook remains negative for thermal coal while the global market remains oversupplied. It is expected that this balance should tighten once supply cuts reach reasonable level while demand increases into winter