UBS Investment Research

UBS Global I/O: Commodity Price Review

Time to Accumulate

22 July 2010

www.ubs.com/investmentresearch

Julien Garran
Analyst
julien.garran@ubs.com
+44-20-7568 3540

Tom Price
Analyst
tom.price@ubs.com
+612 9324 2189

Edel Tully
Strategist
edel.tully@ubs.com
+44 20756 76755

■ Maximising risk/reward

It is time to accumulate metals and mining stocks. But we also advise investors to take their time accumulating, using the inherent volatility of the market to maximise the risk/reward of their investment. We review our five signal approach to maximise risk/reward investment opportunities in the sector.

■ Commodities to watch: thermal coal, copper, zinc & gold

We have only made modest changes to our commodity price forecasts. Short-term base metal prices are pared to reflect recent aggressive sell-downs; bulks' forecasts are broadly unchanged; precious metals are marginally higher. Our preferred commodities over the short- to medium-term are thermal coal, copper, zinc and gold. We still like copper and met-coal longer-term.

■ Top equity picks (& least preferred)

We introduce our Top 10 Global picks; BHP Billiton (BLT LN, Buy), Rio Tinto (RIO LN; Buy), Teck Resources (TCK/B CN; Buy); Sterlite (STLT IN; Buy); Newcrest (NCM AU; Buy); Barrick (ABX US; Buy); Alumina Ltd (AWC AU; Buy); Riversdale (RIV AU; Buy); Consol Energy (CNX US; Buy) and Adaro Energy (ADRO IJ; Buy). Our least preferred; Kumba (KIO SJ; Neutral); Nippon Steel (5401 JP: Neutral); Acerinox (ACX SM; Sell); Umicore (UMI BB) and Johnson Matthey (JMAT LN).

Table 1: UBS Commodity Price Forecasts

Metals	2010E	2011E	2012E	2013E	2014E	LT real
Copper (US¢/lb)	317(344)	345(379)	330(340)	270(nc)	230(nc)	200(nc)
Alum. (US¢/lb)	94(103)	104(110)	110(115)	115(nc)	120(nc)	110(120)
Nickel (US$/lb)	9.3(9.4)	9.3(nc)	9.4(nc)	9.2(nc)	9.1(nc)	8(nc)
Zinc (US¢/lb)	93(105)	104(117)	110(nc)	98(nc)	85(nc)	75(nc)
Gold (US$/oz)	1205(1129)	1295(1250)	1175(1075)	1100(1025)	1075(975)	934(825)
Platinum (US$/oz)	1600(1625)	1700(1657)	1833(nc)	1917(nc)	1980(1946)	1823(1700)
Bulks	JFY10E	JFY11E	JFY12E	JFY13E	JFY14E	LT real
IO (fines; US$/t fob)	105%,124(129)	-5%,118(129)	-3%,115(125)	-13%,99(98)	-19%,80(84)	62(nc)
HCC (US$/t fob)	204(211)	205(nc)	190(nc)	153(nc)	135(nc)	115(nc)
Thermal (US$/t fob)	98(nc)	120(nc)	110(nc)	100(nc)	90(nc)	75(nc)

Source: UBS Research; nc=no change; iron ore prices 63.5% Fe eqv

Time to Accumulate

We believe that it is time to accumulate metals and mining stocks. But we would advise investors to take their time accumulating, using the inherent volatility of the current market to maximise the risk/reward of their investments. In this note we focus on six key themes:

1. China's traders to engage

China's physical traders trade on policy not on macro. They sold down commodity inventories aggressively in April-May, a period when they normally build stocks, despite strong end-demand – due to concerns over policy tightening. By doing this, they priced in a portion of China's demand downturn early. These traders are now likely to offset weak end-demand over the summer as they return to the market, against a backdrop of China policy détente.

2. Breaking the chain – will the alumina suppliers break the contract price link with aluminium?

Major structural changes in the aluminium and alumina industries over recent years, combined with the recent revolution in iron ore pricing, have put the alumina producers in a prime position to break the yolk of the alumina/aluminium contract price linkage. We anticipate a switch to spot based contract pricing as contracts roll off over the next several years.

3. Signal watch – have our five key signals for the metals & mining stocks changed over the last two months?

Our signal on China policy is turning more positive, as evidence mounts of a policy détente, together with the traders' willingness to return to the market. But our dollar funding signal has turned back to amber – as the global monetary authorities have not followed up on their liquidity injections from mid-May, with further commitment to quantitative easing. The fact that this signal is back to neutral warns us that we will remain in a volatile investment environment for quite some time, and it informs our call for patient accumulation.

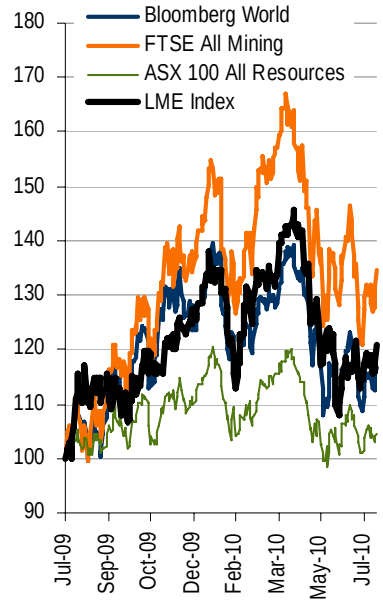
4. Thermal coal – India & Indonesia generate tightness

Thermal coal has held up exceptionally well over the last three months, while other bulk commodities and base metals were marked down. This fits our theme of gathering tightness in the market – driven by Indian demand and constraints on Indonesian exports. We forecast a 20% rise in thermal coal prices to US$120/t for 2011.

5. Zinc – will 10 years of underinvestment come back to bite the zinc market?

For the past five years, any rise in zinc prices above US80¢/lb was greeted by a supply ramp-up in China. This year, China's producers failed to respond, sending a clear signal that underinvestment has capped their productive capacity. When combined with deteriorating prospects for production in the West, this sets up the potential for a period of supernormal returns in zinc over the next two years, to induce a new phase of capacity expansions.

Chart 1: Key Resource Sector Indices



Source: Bloomberg

6. ***We highlight our positive view on gold***

We believe that ongoing pressure on sovereign debt markets, combined with persistent concern over private sector credit contraction will raise the spectre of debt monetisation repeatedly over the next few years. We expect that this background will remain very supportive for gold prices over the period, and that informs our above consensus gold price outlook and our inclusion of two gold stocks in our top ten picks below.

We also introduce our Global Metals & Mining Top 10 picks

We followed the themes above, as well as looking for undervalued growth in precious metals and M&A to form our top ten global metals and mining top picks, and our five least preferred.

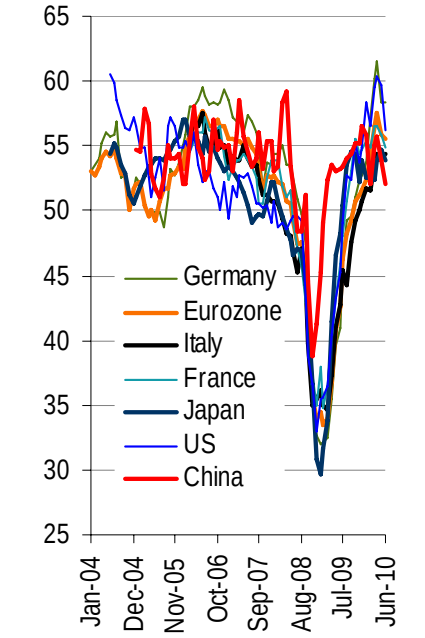
Our Top 10 global picks; BHP Billiton (BLT LN, Buy), Rio Tinto (RIO LN; Buy), Teck Resources (TCK/B CN; Buy); Sterlite (STLT IN; Buy); Newcrest (NCM AU; Buy); Barrick (ABX US; Buy); Alumina Ltd (AWC AU; Buy); Consol Energy (CNX US; Buy) and Adaro Energy (ADRO IJ; Buy).

We also highlight our least preferred; Kumba (KIO SJ; Neutral); Nippon Steel (5401 JP: Neutral); Acerinox (ACX SM; Sell); Umicore (UMI BB; Sell) and Johnson Matthey (JMAT LN; Sell)

…and we push through our quarterly commodity price updates

Our downgrade to metal prices in April was well timed, but in the end – metal prices fell harder than we forecast. So our update downgrades prices for 2010 and 2011 by around 5-10% for the base metals. Bulks remain largely unchanged, save for the upgrades to contract alumina. We have small upgrades to the precious metals, especially gold. Our profiles for the industrial commodities have prices basing out in Q310, before more vigorous appreciation in 2011.

Chart 2: Regional-National PMIs



Source: Bloomberg

UBS commodity price changes: summary

UBS has pared 2010 forecasts for nickel; 2010-11 forecasts zinc; 2010-12 price forecasts for aluminium, copper, and lead – relative to our last published base metals price forecasts (*The Hangover*, Garran, *et al.* 2 May 2010). Beyond 2012, our forecasts are unchanged.

Aluminium and copper price forecasts have been cut 3-9% for 2010-12. For copper, our forecast is now below consensus by 2-5% out to 2012. For aluminium, our forecast is 5% below 2010 consensus, 1-6% above 2011-12's.

Nickel's 2010 forecast has been reduced to reflect weaker-than-expected restocking; we are broadly in line with consensus with these numbers. Zinc and lead prices for 2010-11 have been cut by 10-13%

We have also changed our price forecasts for iron ore, metallurgical & thermal coals versus *Iron Ore & Coal: quarterly price forecasts*, 13 April 2010. We have lowered the iron ore price forecast profile by 4-8%, keeping long-term prices unchanged; we are 2-10% above consensus with these new numbers.

Metallurgical coal price forecasts were only changed for JFY10, by 3-6%, after which we remain 4-8% below consensus. Thermal coal's contract price forecasts remain unchanged. JFY11's forecast of US$120/t fob is 21% above consensus; the entire profile to 2015 is >10% above consensus. UBS is a thermal coal bull.

Our gold price forecast has been lifted 4-13%, as we anticipate an extension of trade fear and uncertainty. This leaves us 7-11% above consensus over the next 2 years; then 1-4% over the longer-term. Modest lifts to the forecasts of silver, platinum and palladium keep us generally in line with consensus.

Global Metals & Mining Top 10

Discussing themes

We introduce UBS' Global Metals & Mining team's Top 10 equity picks, together with our least preferred selection.

We will review and update the selection in each quarterly *Commodity Price Review* report and we will carry out interim changes when we see strong themes and stock specific developments emerging.

There are also five key themes informing our selection of top picks:

1. Buy key diversified miners

This theme comes from our five signal investment approach to the sector; we see signals from valuation, positioning and China policy and trader positioning turning more positive. However, end-demand from the West is a headwind, and 'dollar fund flows' is now amber.

In this environment, we want to keep a strong discipline – using the current market volatility to ***accumulate*** companies featuring very strong balance sheets, powerful cashflow and deep value.

This gives us the margin of safety we require, and the payoff we seek, until we observe a clearer improvement in commodities end-demand, most probably due late in the year.

Our sense is that the cashflow at these companies will be re-rated as commodity prices base out – a key conclusion of our analysis of China traders' later in this report. **This informs our choice of BHP and Rio Tinto in our top pick list**.

2. Seek M&A opportunities in coal

The M&A theme derives from the exceptional cashflow at the miners – and the dearth of organic growth opportunities at corporates such as Rio Tinto. It also stems from the ongoing pressure from China's corporates to enter into M&A to secure future supply. This informs our choice of **Riversdale** in our top picks.

3. Select commodity specific themes

We choose **Alumina Ltd** due to the potential for raising returns on the back of a potential break in the alumina pricing mechanism. We have selected **Sterlite** in India due to its over 50% exposure to quality Hindustan Zinc assets. We like **Consol Energy** and **Adaro Energy** given our positive view on thermal coal.

4. Hold gold

We remain positive on gold, given pressing sovereign debt concerns, and the potential for debt monetisation: top picks are **Newcrest** and **Barrick**.

5. Prefer miners to steel

We have a clear preference for miners over steels-processors on both balance sheets and valuation, so we put **Nippon Steel** and **Acerinox** on our least preferred list. Within the steel sector itself, a clear preference for niche players such as **Steel Dynamics** (STLD US; Buy) and **Allegheny Technologies** (ATI US; Buy).

Least preferred

On our least preferred list we have also mainly placed overvalued stocks such as **Kumba** in South Africa that is not cheap and faces ongoing cost pressure and infrastructure constraints. We also have Umicore and Johnson Matthey least preferred – due to 'toppy' valuations, and exposure to the shrinking European auto markets over the second half of the year.

Table 2: UBS Top Picks (& least preferred)

	Top 10 Picks	Least Preferred
Diversified Miners	BHP Billiton (BLT LN; Buy)	
	Rio Tinto (RIO LN; Buy)	
	Teck Resources (TCK/B CN; Buy)	
Base Metals	Sterlite (STLT IN; Buy)	
Precious Metals	Newcrest (NCM AU; Buy)	
	Barick (ABX US; Buy)	
Bulk Pure Plays	Alumina Ltd (AWC AU; Buy)	Kumba (KIO SJ; Neutral)
	Riversdale (RIV AU: Buy)	
	Consol Energy (CNX US; Buy)	
	Adaro Energy (ADRO IJ; Buy)	
Steels and processors/recyclers		Nippon Steel (5401 JP: Neutral)
		Acerinox (ACX SM; Sell)
		Umicore (UMI BB;)
		Johnson Matthey (JMAT LN;)

Source: UBS Research

UBS Top Equity Picks

Diversifieds

BHP Billiton (BLT LN, Buy). BHP trades at a discount of 34% to fair value; has an exceptionally strong balance sheet; very solid cashflow; has the opportunity for accretive M&A or accretive capital management. We believe that the strong cashflows will be re-rated as commodity prices stabilise.

Rio Tinto (RIO LN; Buy). Rio is the cheapest stock of the big four London Diversifieds, trading at a 37% discount to our NPV. It is also the cheapest way to gain exposure to iron ore. Balance sheet and cash flow is robust, and we also expect Rio to be rerated as commodity prices stabilise.

Teck Resources (TCK CN; Buy). Teck Resources is a diversified mining company offering exposure to metallurgical coal and copper, two of UBS' favoured commodities (has internal growth potential in these commodities). Teck also offers exposure to zinc through its interests in Red Dog and Antamina, two of the largest zinc mines in the world. We highlight permitting issue at Red Dog. Teck has significantly increased its financial flexibility after over-leveraging itself to purchase Fording in late 2008. Rating agencies have recently upgraded the company's debt to investment grade.

Base Metals

Sterlite (STLT IN; Buy) has a greater than 50% exposure to the high quality Hindustan Zinc assets; stock remains cheap; may also benefit from the buy out of minorities.

Precious Metals

Newcrest (NCM AU; Buy) remains very cheap relative to global peers; has unhedged exposure to the positive outlook for gold; significant acquisition driven growth profile, following Lihir takeover; perennial takeover target itself.

Barrick (ABX US; Buy) is the world's largest gold producer and largest gold company in terms of market capitalization, at $41 billion. The company has eliminated its gold hedging, boasts the industry's only 'A'-rated balance sheet and offers moderate geopolitical risk. Barrick has a portfolio of internal growth projects that should moderately increase production at lower costs. These include Cortez Hills (operating), Pueblo Viejo and Pascua-Lama and potentially Cerro Casale, Donlin Creek and Reko Diq.

We note that the company has an excellent operational track record with all of its scheduled projects over the past few years starting on time and within budget. Barrick's size and balance sheet could also open the door for further growth opportunities, but we note the company will have a large capital budget if it is successful in developing all of its major projects.

Bulk Pure Plays

Alumina Ltd (AWC AU; Buy) owns 40% of the AWAC joint venture, a pure play on alumina prices. Consequently, it should benefit from the shift towards spot based contract prices that we anticipate.

Riversdale (RIV AU: Buy). Riversdale is a met-coal pure play with Mozambique-based assets; coal resources at Benga and Zambeze; because of large resources base, and proximal position to European and Asia, we see this as a takeover target (India & China).

Consol Energy (CNX US; Buy). CNX's low cost thermal exposure and proximity to the US coast is poised to benefit from rising seaborne thermal demand. CNX currently sports a 3.1 2011 EV/EBITDA multiple and its 2011e free cash flow yield stands at 9.2%

Adaro Energy (ADRO IJ; Buy). Adaro's strong earnings and low capex should result in strong free cash flow generation in 2010-12. Share liquidity has increased significantly to US$20m/day and Adaro is now Indonesia's largest market cap coal producer at US$7bn; large investments have been allocated to high-quality infrastructure; 1bn tonnes of coal reserves supports management's target to double production by 2014.

We believe strong cash generation will benefit minority shareholders through either: 1) dividend payments; or 2) asset acquisitions. Company's high export exposure (70%) has earnings highly leveraged to thermal coal price momentum.

Least preferred

Bulk Pure Plays

Kumba (KIO SJ; Neutral); our least preferred list, because trade is at 8.3x for 2011 versus BHP & RIO at 6.6x, which are a cheaper plays to gain iron ore exposure. Also wary of ongoing cost pressures at Kumba's operations, and infrastructure constraints on growth.

Steels and processors/recyclers

Nippon Steel (5401 JP: Neutral). We expect Nippon Steel to underperform the metals and mining complex. Because of the strong yen, Japanese steel mills lose cost advantage and the clients request severe pricing, In Q1 2010, the earnings will be below market expectation due to margin pressures. Due to Korean steel mills capacity expansion, high end steel supply will increase over the next 12 months.

Acerinox (ACX SM; Sell). market pricing in strong Q2; expect pricing to deteriorate in Q3; earnings to fall from Q2 level. We remain cautious on a long term perspective as we view the stainless market as structurally oversupplied.

Umicore (UMI BB;Sell): shares have enjoyed strong auto-driven momentum; stock now trading on 15x 2011E earnings, probably difficult to justify, given slowdown in global car production, and unsustainably high returns in Precious Metals division.

Johnson Matthey (JMAT LN; Sell): Shares were strongly up in the recent weeks on truck related sentiment; stock trading on 16.5x 2011 earnings (at c15% premium to long term average); too high given downgrade risks to consensus earnings, declining global car production, no leverage to precious metal prices.

UBS Top Commodity Picks

No. 1

- **thermal coal**: well supported by many demand- &; supply-side factors.
- **copper**: China's inventories are low; 'top-up' restocking imminent.
- **zinc**: high inventories disguise under-performing global mine supply.
- **gold**: not out of the woods yet; support from the extension of 'fear trade'.

No. 2

- **alumina**: beneficiary of relentless aluminium production/capacity growth; imminent price mechanism change, from contract-to-spot, offers upside to those long-alumina.
- **metallurgical coals**: resources depletion still exceeds discovery rate; large new resources in Mongolia & Mozambique provide some trade relief in 5-10 years; consolidated supply-side offers significant price support.
- **iron ore**: seaborne's oligopoly is now being challenged by alternative production capacity entering the market, undermining supply-side's pricing power; game theory suggests oligopoly's rational response to entrants is lifting output, bearish outcome for longer-term prices.

No. 3

- **uranium**: mine supply sufficient, despite lift in downstream nuclear power demand with utility construction in China, India and even the US.
- **nickel**: stainless steel producers require clear improvement in macro-outlook before engaging the market; China's NPI 'short-circuit' of the global trade limit's price upside.
- **lead**: 'cash-for-clunkers' was a key support; any upside now depends on sustainable macroeconomic growth.

No. 4

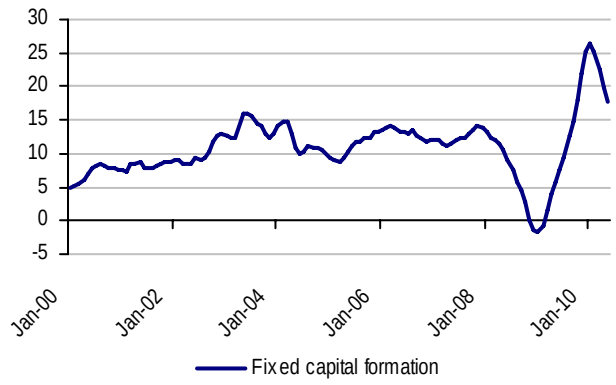
- **aluminium** (least preferred): market seeks upside in this market, but its fundamentals are appalling weak; not just 2-3x normal inventory levels, but a complete lack of producer discipline worldwide impairs the metal's value.

China's traders to engage

Over recent weeks, we have seen a sharp rise in the level of concern over the slowdown in China. But in our view, the time to be most concerned was April, just as demand was booming, as policy makers tightened and before China's traders sold down their inventory.

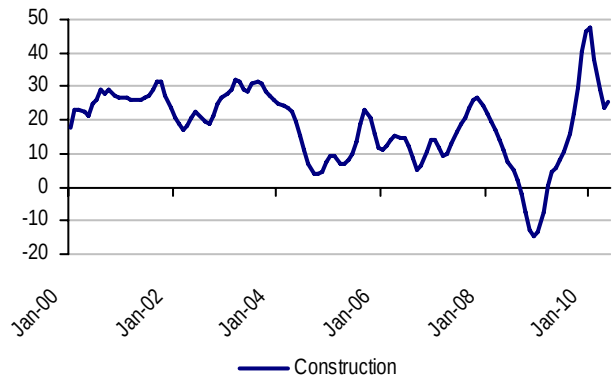
In early April, we put our China policy signal firmly on red. Now we have it on Amber++ (i.e. + sign means turning more positive). Why do we have this signal turning more positive when there is a clear slowdown underway in China?

Chart 3: UBS China activity for fixed capital formation



Source: UBS Research, China National Statistics

Chart 4: UBS China activity for construction



Source: UBS Research, China National Statistics

- **Second**, slower loan growth induced a deceleration in industrial activity from mid year, and this ended the restocking of industrial products that took place in Q409 and Q110. This industrial inventory cycle naturally exacerbates the deceleration in growth, as it does in western economies. And the housing policy tightening has added to this cyclical slowdown, as construction activity in high-end property development has started to fade, as has the associated buying of white goods.

There is no question that China is slowing down

But we see conditions turning more positive for four key reasons;

+ China's traders have very low inventories and are waiting on the sidelines ready to buy

The chart below shows China's copper inventories. In the four months between February and May each year, China's traders buy 6-7 months of material, building a stockpile as they go. They then sell this inventory to semi-manufacturers in the summer.

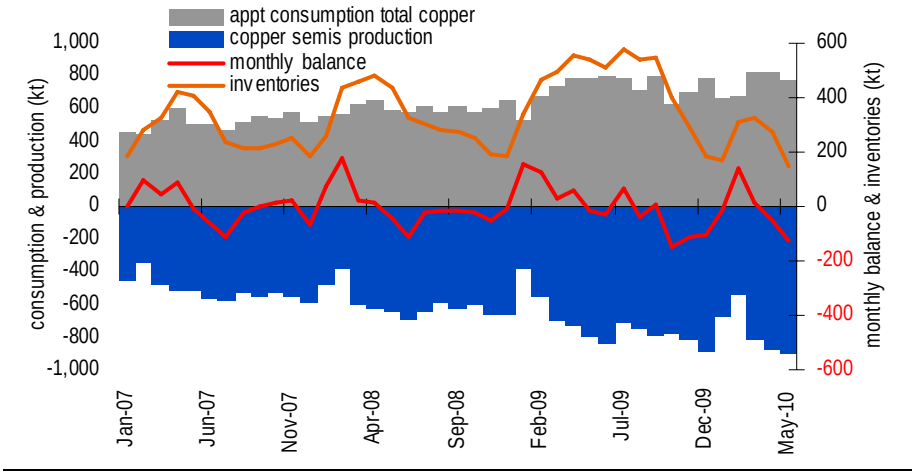
But China's physical traders priced the slowdown in by selling early, in April-May, when demand was still strong

So while traders priced in a large portion of the current slowdown by selling in April and May, when end-demand was strong, likewise we think that they will offset weak demand over the summer by buying hand to mouth – when normally they would be destocking.

But this is not just a copper story. We see similar developments across the base metals, bulks and steel. Our conversations with iron ore traders suggest that they are willing to buy in the US$100-120/t range, most likely at the bottom end of

that range – a price that coincides with the marginal costs for the expensive end of the domestic China iron ore industry. And for the economy as a whole, the inventory to sales ratio has hit a 10 year low of 0.38.

Chart 5: China's copper semis output vs. total contained copper supply



Source: China customs, UBS research

China's total copper inventories (SHFE + off warrant), calculated using monthly reported total copper supply offset against semi-manufactured production.

Primary feature of the data is the pronounced seasonality.

If it persists, then China's short copper now; it needs to re-engage the market soon to meet forecast demand growth.

Policy détente

After a robust policy tightening regime from late last year into Mid-May this year, we have seen several signs of policy détente;

- in Mid-may, Wen Jiao Bao complained of excessive 'overlapping' policy tightening measures;
- the PBoC unwound sterilisation measures in the year to mid-May (of US$250bn), by reinjecting US$130bn back into the system in the seven weeks from Mid-May (although the last week has seen an US$8bn withdrawal).
- the State Council ensured the release of land banks for public housing and then agreed public housing construction projects with a range of local authorities;
- Chonqing authorities released its plans to construct 10m square meters of public housing over the next year, which would account for 35% of residential construction in the city on today's annual run-rate;
- our Australian analysts' Asian marketing program this month revealed a distinct shift in tone among equity investors in the region. Like China's physical traders, Asia's equity investors are focussed more on China policy than on any other trade signal.

Importance of Seasonality

Finally, a significant portion of China's slowdown is seasonal, and it will reverse itself at year end.

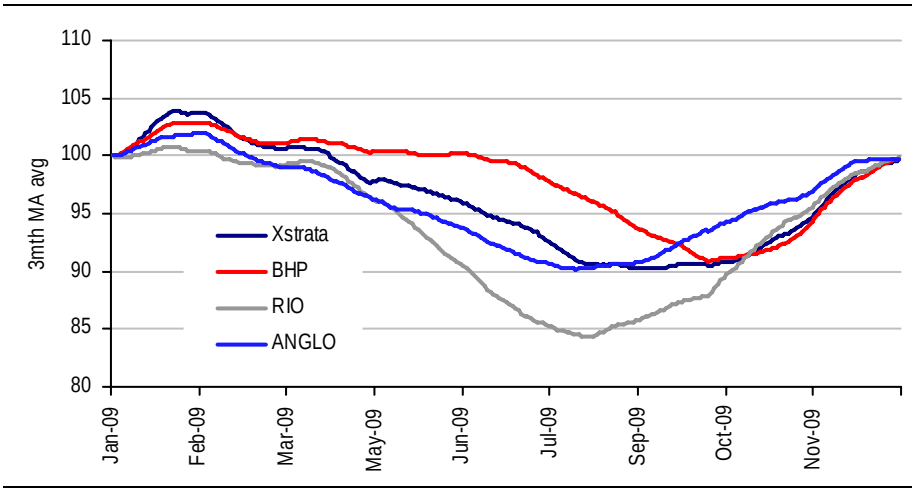
What has perhaps unsettled investors is a need to focus on this, as annual contracts and iron ore had previously allowed investors to ignore seasonal

patterns as they focussed on the bigger picture. But the move to spot indices and lagged quarterly prices creates a much greater focus on short-term trends.

The chart below illustrates a seasonal focus has in fact been important for the mining stocks for years; the chart shows big-4 European Diversifieds average discount to NPV fair value over the year (data taken from the last 10 years).

It shows clearly that July and August are the cruellest months, with an average discount to NPV of 10%. It is also seasonally best time to buy the miners – as this is the maximum seasonal discount to NPV, and the company tends to move to a small premium by February.

Chart 6: Average seasonal discount/premium to NPV



Source: UBS research

Price-NPV ratios illustrate seasonality across the majors, that is difficult to ignore.

We have 3 months to consider an entry point.

Perhaps the better way to think of China's traders is to consider the risk/reward decision-making that drives their actions. In April it made absolute sense to sell down inventory in the face of policy tightening. This allowed them to reduce exposure to likely falling prices over summer. But now inventories are low, they face a different calculus.

They need to buy at least hand-to-mouth, or perhaps even more aggressively, and they will become more likely to buy should prices begin to base. Beyond this short-term 'topping-up' of stocks, we expect China's metals industry to return to the larger-scale seasonal retocks that begins at the end of the year. Further newsflow on policy détente would also spur buying.

In our view, China's traders will provide increasing support for commodities prices over the rest of the year, offsetting the weak end-demand that we otherwise anticipate.

UBS commodity price forecasts

Base metals price forecasts

Table 3: UBS base metals price forecasts

Commodity	period	old	new	%chg	Vs. Consensus	
Copper (US$/lb)	2010E	3.44	3.17	-8%	3.34	-5%
	2011E	3.79	3.45	-9%	3.52	-2%
	2012E	3.40	3.30	-3%	3.36	-2%
	2013E	2.70	2.70	0%	3.23	-17%
	2014E	2.30	2.30	0%	2.88	-20%
	LT price (nom. 2015)	2.28	2.27	-1%	1.91	19%
	LT price (real 2010)	2.00	2.00	0%	1.68	
Aluminium (US$/lb)	2010E	1.03	0.94	-9%	1.00	-5%
	2011E	1.10	1.04	-5%	1.03	1%
	2012E	1.15	1.10	-4%	1.04	6%
	2013E	1.15	1.15	0%	1.08	7%
	2014E	1.20	1.20	0%	1.11	8%
	LT price (nom. 2015)	1.37	1.25	-9%	1.01	23%
	LT price (real 2010)	1.20	1.10	-8%	0.90	
Nickel (US$/lb)	2010E	9.44	9.25	-2%	9.43	-2%
	2011E	9.30	9.30	0%	9.21	1%
	2012E	9.40	9.40	0%	9.05	4%
	2013E	9.20	9.20	0%	8.75	5%
	2014E	9.10	9.10	0%	8.38	9%
	LT price (nom. 2015)	9.14	9.08	-1%	6.54	39%
	LT price (real 2010)	8.00	8.00	0%	5.78	
Zinc (US$/lb)	2010E	1.05	0.93	-12%	1.02	-9%
	2011E	1.17	1.04	-11%	1.08	-4%
	2012E	1.10	1.10	0%	1.11	-1%
	2013E	0.98	0.98	0%	1.10	-11%
	2014E	0.85	0.85	0%	0.98	-13%
	LT price (nom. 2015)	0.86	0.85	-1%	0.77	11%
	LT price (real 2010)	0.75	0.75	0%	0.68	
Lead (US$/lb)	2010E	1.01	0.91	-10%	0.98	-7%
	2011E	1.15	1.00	-13%	1.06	-6%
	2012E	1.05	1.00	-5%	1.07	-6%
	2013E	0.85	0.85	0%	1.05	-19%
	2014E	0.65	0.65	0%	0.86	-24%
	LT price (nom. 2015)	0.51	0.51	-1%	0.56	-8%
	LT price (real 2010)	0.45	0.45	0%	0.49	
Uranium (US$/lb)	2010E	51	43	-17%	51	-17%
	2011E	64	48	-25%	62	-23%
	2012E	65	55	-15%	65	-15%
	2013E	65	60	-8%	62	-3%
	2014E	65	65	0%	59	11%
	LT price (nom. 2015)	69	68	-1%	52	32%
	LT price (real 2010)	60	60	0%	46	

Source: UBS Research

Precious metals & crude oil forecasts

Table 4: UBS precious metals & crude oil forecasts

Commodity	period	old	new	New vs Old	Vs. Consensus	
Gold (US$/oz)	2010E	1129	1205	7%	1121	7%
	2011E	1250	1295	4%	1167	11%
	2012E	1075	1175	9%	1143	3%
	2013E	1025	1100	7%	1087	1%
	2014E	975	1075	10%	1036	4%
	LT price (nom. 2015)	942	1060	13%	793	34%
	LT price (real 2010)	825	934	13%	701	
Silver (US$/oz)	2010E	17.74	18.32	3%	17.51	5%
	2011E	19.50	19.50	0%	18.67	4%
	2012E	15.50	16.00	3%	18.04	-11%
	2013E	14.90	16.00	7%	17.34	-8%
	2014E	14.40	15.50	8%	16.30	-5%
	LT price (nom. 2015)	14.3	15.04	5%	11.27	33%
	LT price (real 2010)	12.5	13.25	6%	9.96	
Platinum (US$/oz)	2010E	1625	1600	-2%	1635	-2%
	2011E	1657	1700	3%	1751	-3%
	2012E	1833	1833	0%	1753	5%
	2013E	1917	1917	0%	1804	6%
	2014E	1946	1980	2%	1829	8%
	LT price (nom. 2015)	1941	2069	7%	1498	38%
	LT price (real 2010)	1700	1823	7%	1324	
Palladium (US$/oz)	2010E	466	470	1%	462	2%
	2011E	490	525	7%	530	-1%
	2012E	480	525	9%	533	-1%
	2013E	569	569	0%	585	-3%
	2014E	703	703	0%	626	12%
	LT price (nom. 2015)	647	643	-1%	474	36%
	LT price (real 2010)	567	567	0%	419	
Rhodium (US$/oz)	2010E	2428	2515	4%		
	2011E	2825	2825	0%		
	2012E	4600	4600	0%		
	2013E	7016	7016	0%		
	2014E	7786	7786	0%		
	LT price (nom. 2015)	4853	4823	-1%		
	LT price (real 2010)	4250	4250	0%		
WTI crude oil	2010E	76	77	1%	82	-6%
	2011E	80	80	0%	87	-8%
	2012E	80	80	0%	90	-11%
	2013E	81	80	-1%	90	-11%
	2014E	83	82	-1%	88	-7%
	LT price (nom. 2015)	85	84	-1%	80	5%
	LT price (real 2010)	74	74	0%	71	

Source: UBS Research

Bulks price forecasts

Table 5: UBS iron ore, metallurgical & thermal coal price forecasts

Commodity	period	old contract		new contract		new vs old	consensus	consensus	UBS vs cons
Australian (Pilbara) iron ore fines		%chg yoy	US$/Fe unit	%chg yoy	US$/Fe unit	% chg	US$/Fe unit	%chg yoy	% diff.
	JFY09		0.954		0.954				
	JFY10E	113%	2.035	105%	1.960	-4%	1.907	100%	3%
	JFY11E	0%	2.029	-5%	1.865	-8%	1.836	-4%	2%
	JFY12E	-3%	1.965	-3%	1.805	-8%	1.684	-8%	7%
	JFY13E	-21%	1.544	-13%	1.561	1%	1.416	-16%	10%
	JFY14E	-14%	1.323	-19%	1.265	-4%	1.243	-12%	2%
	LT price (nom. 2015)	-15%	1.122	-12%	1.115	-1%	0.808	-35%	38%
	LT price (real 2010)		0.976		0.976	0%	0.714		
Hard coking coal		%chg yoy	US$/t	%chg yoy	US$/t	% chg	US$/t	% diff.	% diff.
	JFY09		129		129				
	JFY10E	64%	211	58%	204	-4%	222	-8%	-8%
	JFY11E	-3%	205	1%	205	0%	214	-4%	-4%
	JFY12E	-7%	190	-7%	190	0%	192	-1%	-1%
	JFY13E	-20%	153	-20%	153	0%	173	-12%	-12%
	JFY14E	-11%	135	-11%	135	0%	158	-15%	-15%
	LT price (nom. 2015)	-2%	132	-3%	131	-1%	114	15%	15%
	LT price (real 2010)		115		115	0%	101		
Low Vol PCI		%chg yoy	US$/t	%chg yoy	US$/t	% chg	US$/t	% diff.	% diff.
	JFY09		90		90				
	JFY10E	89%	170	83%	165	-3%	177	-7%	-7%
	JFY11E	-3%	165	0%	165	0%	170	-3%	-3%
	JFY12E	-9%	150	-9%	150	0%	152	-1%	-1%
	JFY13E	-18%	123	-18%	123	0%	137	-10%	-10%
	JFY14E	-12%	108	-12%	108	0%	125	-14%	-14%
	LT price (nom. 2015)	-4%	103	-4%	103	-1%	89	16%	16%
	LT price (real 2010)		90		90	0%	78		
Semi-Soft coking coal		%chg yoy	US$/t	%chg yoy	US$/t	% chg	US$/t	% diff.	% diff.
	JFY09		80		80				
	JFY10E	107%	166	93%	155	-6%	166	-7%	-7%
	JFY11E	-5%	158	2%	158	0%	147	7%	7%
	JFY12E	-17%	130	-17%	130	0%	129	1%	1%
	JFY13E	-15%	110	-15%	110	0%	113	-3%	-3%
	JFY14E	-9%	100	-9%	100	0%	106	-6%	-6%
	LT price (nom. 2015)	-2%	98	-3%	97	-1%	81	20%	20%
	LT price (real 2010)		85		85	0%	72		
Thermal coal		%chg yoy	US$/t	%chg yoy	US$/t	% chg	US$/t	% diff.	% diff.
	JFY09		71		71	0%			
	JFY10	38%	98	38%	98	0%	96	2%	2%
	JFY11E	22%	120	22%	120	0%	99	21%	21%
	JFY12E	-8%	110	-8%	110	0%	97	13%	13%
	JFY13E	-9%	100	-9%	100	0%	91	9%	9%
	JFY14E	-10%	90	-10%	90	0%	88	2%	2%
	LT price (nom. 2015)	-5%	85	-6%	85	-1%	68	24%	24%
	LT price (real 2010)		75		75	0%	60		

Source:

UBS commodity price forecasts: charts

Chart 7: Copper

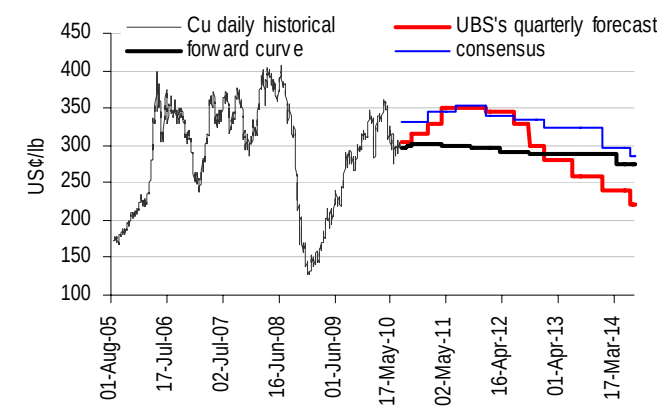


Chart 8: Aluminium

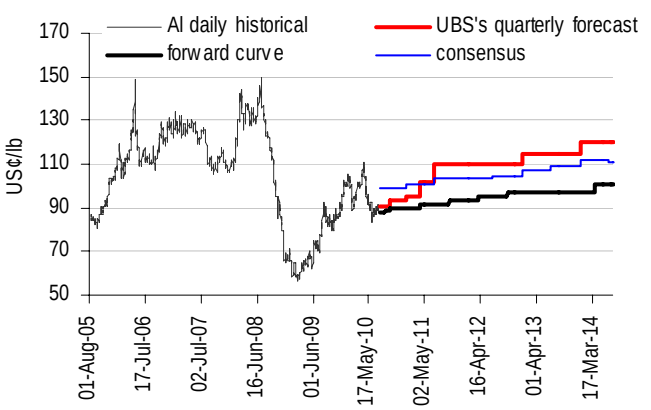


Chart 9: Nickel

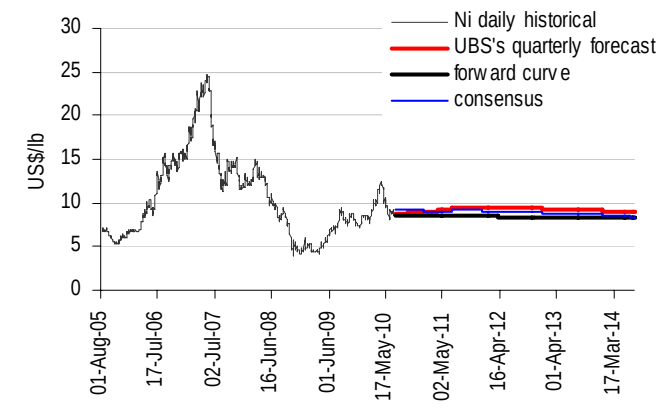


Chart 10: Zinc

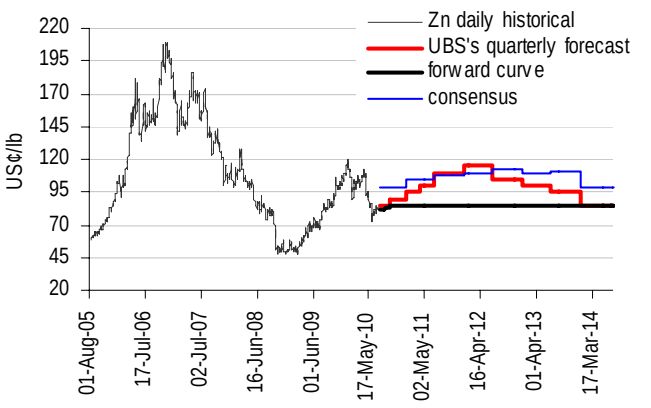


Chart 11: Lead

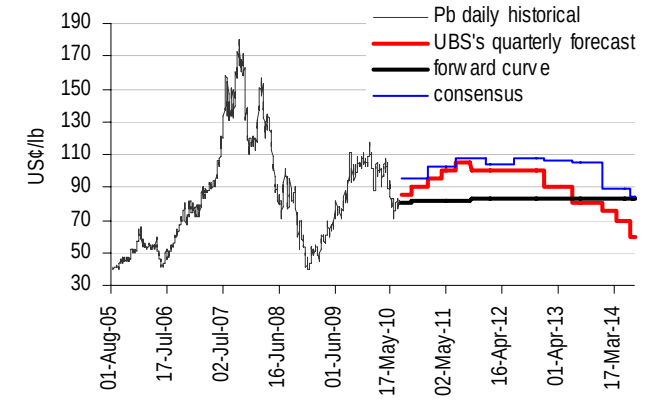
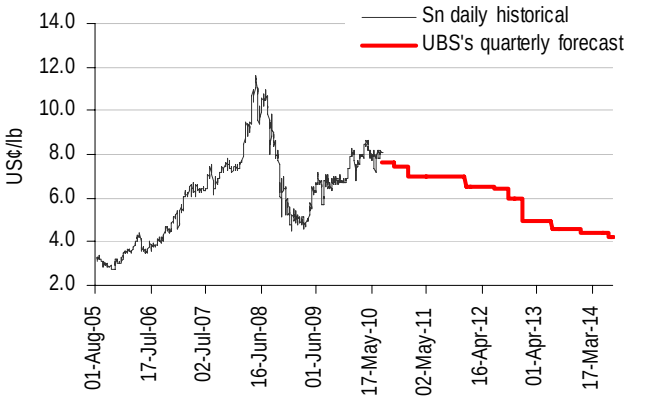


Chart 12: Tin



Source: UBS Research, Bloomberg, industry contacts

UBS commodity price forecasts: charts

Chart 13: Gold

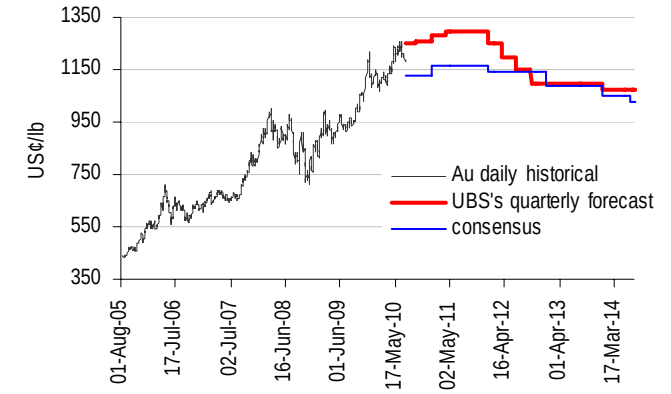


Chart 14: Crude oil

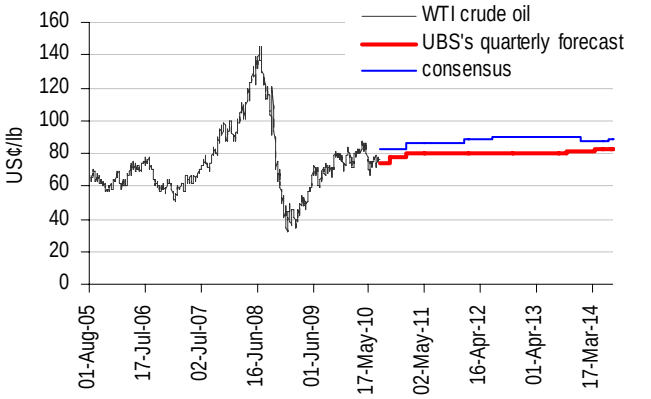


Chart 15: Thermal coal (Newcastle spot; JFY contract)

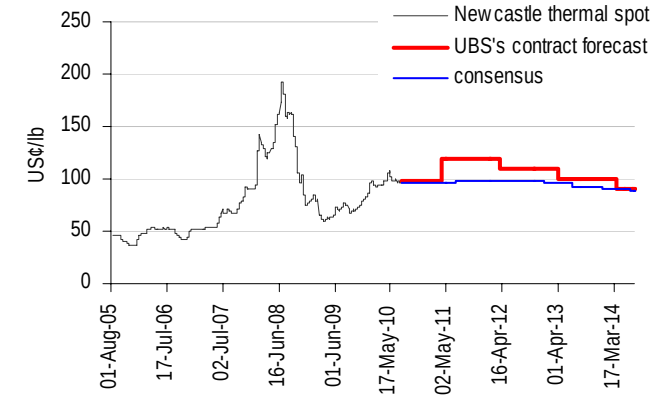


Chart 16: Uranium

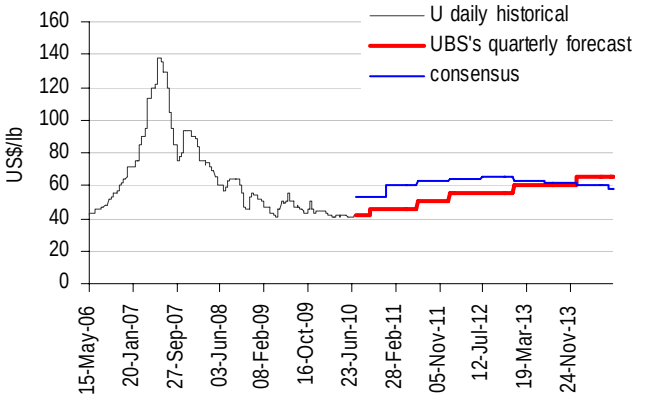


Chart 17: Hard coking coal

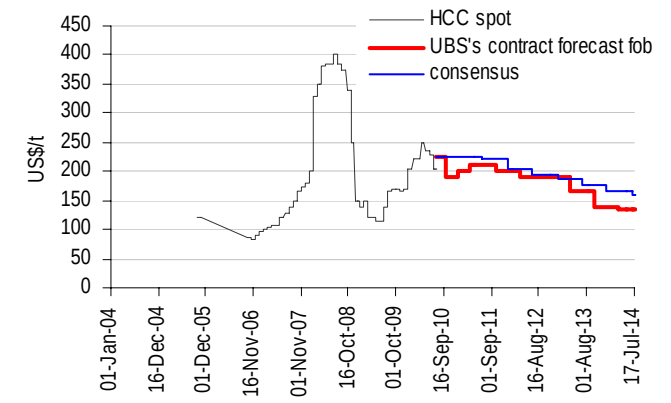
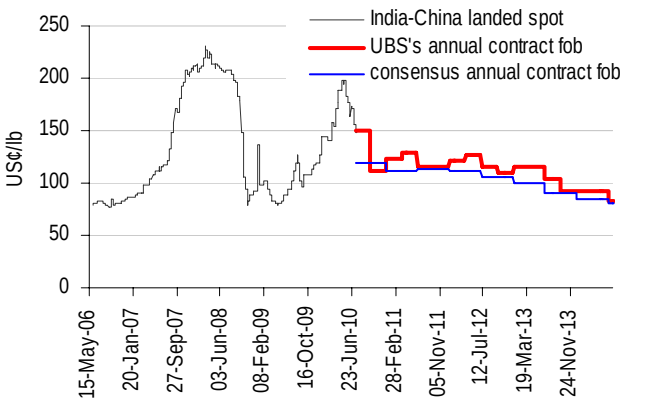


Chart 18: Iron ore (fines)



Source: UBS Research, Bloomberg, industry contacts

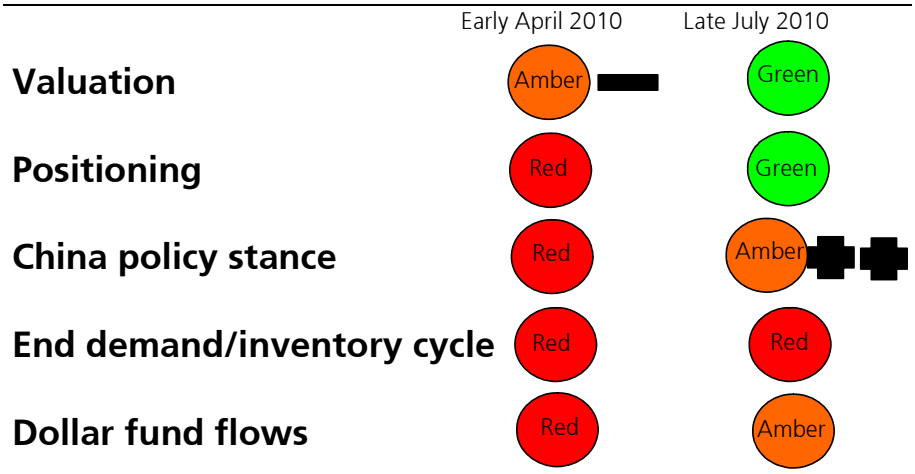
Watching the signals

Are there any changes to your signals on the sector since you launched your five signal approach to the sector at the end of May?

Our China signal is turning more positive – as we see an increasing likelihood that equity investors and physical traders start to buy, against a background of Chinese policy détente (see section one).

But we are returning our 'dollar funding' signal to neutral – as policy comments from the ECB, the MOPC and various members of the FOMC indicate an unwillingness to commit to further quantitative easing without a palpable deterioration in either risk assets or economic signals.

Chart 19:UBS metals and mining investment signals



key; - means deteriorating, + means improving

Source: UBS Research

Our concern on dollar funding goes to the heart of why we are using a 'five signal' risk/reward approach to investing in the sector in the first place.

Cheap, plentiful dollars is critical to our call for improving commodity and mining equity markets.

We highlighted in *From red to green*, 30 June, 2010, that we believed the central weakness in the global economy was that banks had not been cleansed of the bad debt on their balance sheets, following the credit crunch.

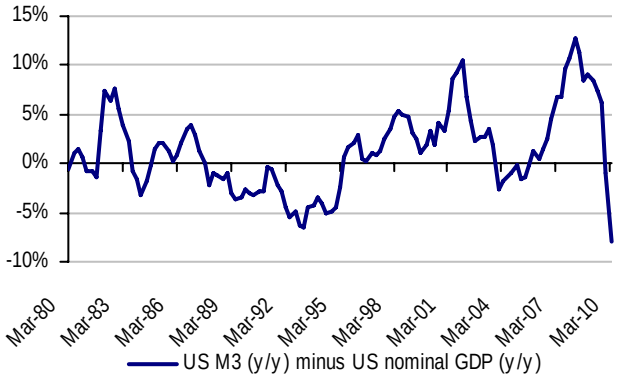
So, unlike the rebound from the US savings and loans crisis of the early 1990s, or the Swedish banking crisis of the same era – the banks will struggle to respond to a stimulus driven recovery by raising their loan to deposit ratios, thereby transforming a recovery into a sustained expansion. Instead, they will likely write off bad assets, and sit on their hands.

This puts an incredible pressure on monetary authorities. The central issue is this; if the private sector shrinks its loan to deposit ratios – it means that dollar funding will fall short of GDP.

Chart 20: Global foreign exchange reserves

Source: Bloomberg

Chart 21: US M3 (y/y) minus US nominal GDP (y/y)



Source: Datastream, UBS research, Shadowstats

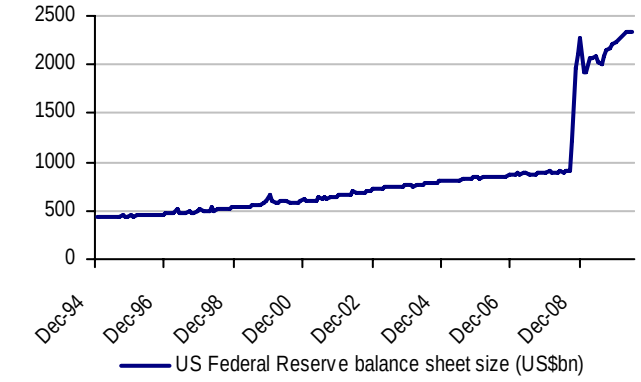
Note on chart 22; M3 data can, from time to time, be significantly distorted by liquidity preference. In late 2008 and early 2009, corporates decided to take up agreed bank lending lines – and then to put those loans on deposit at lower rates, to ensure they had sufficient capital to ride the downturn. This artificially boosted money supply in Q408 and Q109, and it artificially lowered money growth comparisons a year later.

If money and credit grows faster, it generates distortions: asset prices rise relative to incomes, and this induces a misallocation of resources towards servicing capital (everything from stockbroking to building unwanted assets) and away from productive capital (businesses that make a positive return on their cost of capital without relying on asset price appreciation).

We have concerns that the monetary authorities are not providing sufficient liquidity

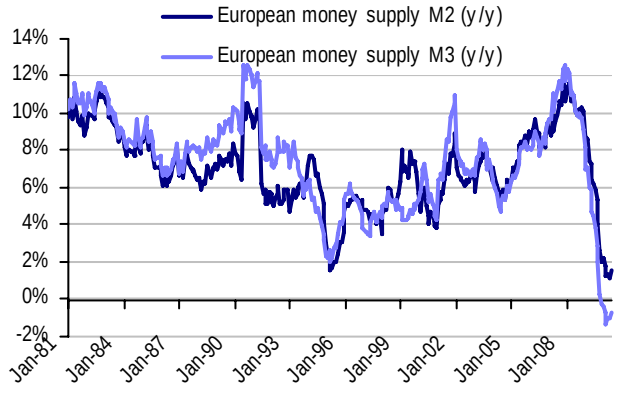
The problem with this environment, which has been in place as a secular trend from 1974–2008, is that as soon as money growth stops expanding, asset prices fall, and the economy experiences deflation in both asset and goods prices, leading to inevitable loss of output, as the capital invested in non-productive assets is destroyed. After 40 years of credit rising faster than nominal GDP, an Austrian monetarist would argue that we have an unprecedented imbalance between asset prices and income, and that this poses an intense deflationary threat.

Chart 22: US Federal Reserve balance sheet size



Source: Bloomberg

Chart 23: European money supply (M2 and M3) monthly y/y



Source: Datastream

And the key issue now is that banks are still shrinking their loan to deposit ratios (this is a combination of tight lending standards, and the corporate sectors' unwillingness to borrow), and the broader disintermediated credit system is retiring asset backed securities. The Austrian economists would argue that any sustained period of shrinking credit would cause deflation.

And the burden on the Federal Reserve is doubly onerous. First, it must offset completely the reduction in credit caused by the deleveraging in the banking sector and the shadow banking sector (the credit generated outside the 'official' banking system). Then it must provide additional credit expansion to support monetary growth.

The central risk then is that the Fed has not experienced a sustained private sector deleveraging since the 1930s, and it has never experienced a deleveraging of this magnitude and complexity. Consequently, it may struggle to quantify how much liquidity it needs to provide.

Instead, it may wait for macro and market signals to indicate whether it is providing sufficient stimulus. It may lurch into what we call a 'SICC' cycle – one of Stimulus, Improvement, Complacency (thinking it has done enough to trigger expansion, when it hasn't) and Crisis.

All this is critical to our call on the commodities. Because it goes to the heart of dollar fund flows – which are at the root of emerging market credit creation and ultimately commodity demand.

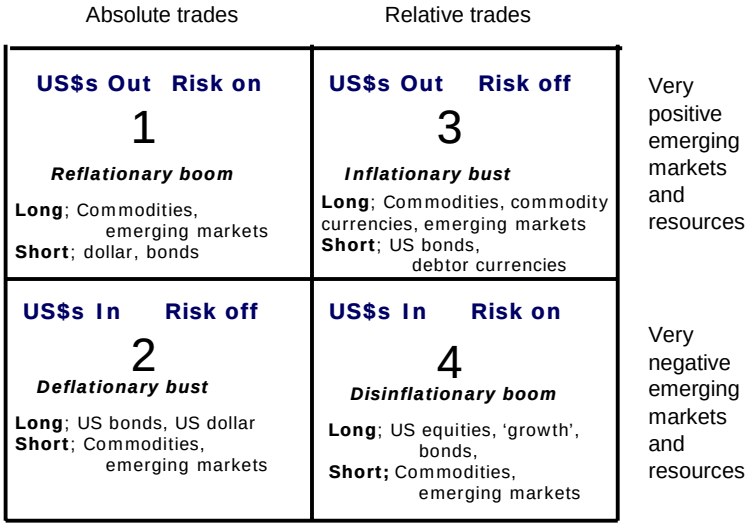
If the Fed is providing ample liquidity – sufficient for funds to flow out of the US into emerging markets – it triggers credit expansion and self-reinforcing commodity intensive growth. It places us squarely in **Zone 1** in the chart below – **reflationary boom** – that is exceptionally positive for commodities and metals and mining equities. If the Fed action is insufficient, then there is insufficient credit to support growth.

That causes dollars to flow back into the US, and it means that emerging markets themselves receive insufficient funds for growth. So with the demand for capital rising with nominal GDP, but the supply shrinking – the inevitable result is a rise in the cost of capital.

That rise would most likely be felt in credit spreads for weaker corporates, municipalities, sovereigns and asset backed securities. The rise in the cost-of-capital, most likely above the return on capital, sets off a **deflationary bust**, pushing us into **Zone 2** of the chart below.

The danger in this zone is that a rising cost of capital through spread widening for corporate, municipal, sovereigns and asset backed securities would generate a further deterioration of assets on banks' balance sheets – which in turn will force the banks to further reduce loan to deposit rates, which can lead to a self-reinforcing vicious circle of declining credit quality and declining credit availability.

Chart 24: The UBS resources asset allocation clock



Source: UBS research

So, will the Fed, the ECB, the MPC and the Chinese authorities provide sufficient liquidity to push us back into the reflation Zone 1?

At the end of May, and again in late June, the signals were good. The ECB was buying government bonds, it was offering easier repo (collateral) requirements for loans to the commercial banks, and it was offering 'unlimited' credit to those same banks. The Fed offered US$0.5trn in dollar swap-lines, and China's authorities injected US$130bn into the banking system by buying back bonds.

But this is not the 2000s. When the signal is positive, we cannot buy and go to the beach for a couple of years, happy in the knowledge that government liquidity injections combined with powerful private sector credit creation will keep the reflation trade going.

Instead, we have to watch the authorities like hawks. And what has struck us about the rally in risk assets from July 1 to July 20, when the mining sector rose 14% and the S&P rallied 7%, was the apparent speed with which the authorities started to signal that their liquidity measures would be limited.

The monetary authorities are stopping short of a second round of quantitative easing

Then we had FOMC members Elizabeth Duke, Jeffrey Lacker, Richard Fisher and Thomas Hoenig all stating that further stimulus – a second round of quantitative easing – was unnecessary. Now, technically, statements from FOMC members are independent of the five person board of governors, which makes the decision on QE, and which Fed watchers believe Bernanke dominates.

During his Humphrey Hawkins testimony on July 21, Ben Bernanke stated that 'We are not prepared to take any specific steps [to ease policy] in the near term, particularly since we're also evaluating the recovery'. In the light of this statement, the recent comments from ECB board and FOMC members, and the recent Chinese action, we are moving our 'Dollar funding' signal back from

Green to Amber. We remain vigilant for one of two things from the authorities; inaction – which would turn us more cautious, and explicit quantitative easing that would make us more positive.

The risk of potential policy inaction in the short term in the face of deflationary pressure is an important driver behind our positive call on the gold market, and our inclusion of Newcrest in our global Top Picks list.

Iron Ore & Met-Coal

Year of turmoil

After several years of campaigning, BHP Billiton finally made its move this year, and pushed for an unprecedented change to the price mechanisms of the seaborne bulk trades of iron ore and metallurgical coal.

The long-standing annual benchmark price culture was formally replaced in March-April with shorter-term contracts, or with a relevant index. These prices are now being referenced by the separate, typically longer-dated supply contracts of these trades.

Again, the changes apply only to the iron ore and metallurgical coal trade. Thermal coal's pricing remains generally unchanged (about 50% of this trade is spot; 50% is a mixture of annual JFY/CY/FY and semi-annual contracts).

Why change?

Many believed that this push was short-sighted, merely a grab for the apparent price upside, while sacrificing the protection annual contracts offered producers to price weakness.

Method in BHP Billiton's madness

BHP Billiton argues that all bulk producers lost confidence in benchmark's security when annual contracts widely failed in 2009 during the GFC. Therefore, in practice, shorter-term contracts and indices pose a similar level of risk for producers in trade.

So with shorter-term price, and in a weak market (not a collapse, as in Q109), what downside risk to prices is there? We believe for iron ore and met-coal markets, the downside risk is limited, because the producers of the consolidated supply-side can act together to reduce supply in a weak market to support product prices.

Managing prices by managing supply

For example, following the Q408 equity correction, the met-coal producers of Queensland's Bowen Basin (BHP, Rio, Peabody, Xstrata, Anglo) cut 20Mt of supply ahead of annual benchmark talks, and secured a surprise US$129/t, when the market was expecting <$100/t fob outcome. The co-ordination among the iron ore producers is even greater. Note, while product prices may be supported, trade volumes remain a significant revenue risk in weak markets.

Seeking spot's floor

With spot prices falling, what's a likely stable floor?

The downside of iron ore and met-coal prices is currently being thoroughly tested. Iron ore's highest profile spot price, the India-China trade, has now fallen almost 40% since its mid-April high, to just US$119/t cfr China; while met-coal's prices have weakened since mid-April by 25% (**HCC now US$186/t fob Aust.;** latest price details on lower grades unavailable).

The primary driver of these falling spot prices seasonally weaker H2CY global steel production growth rates (*Iron Ore & Coal: quarterly price forecasts*, 13-Apr-10). In met-coal's case, the HCC spot trade this end of the year typically contracts to feature sparse, irregular transactions.

Marginal costs suddenly matter to bulk price forecasts

But recent work on the marginal costs of production for the iron ore and met-coal trades suggests that spot prices and indices of these two markets are now nearing a stable price floor (*Bulks: what's the price downside?* 2-Jul-10).

In a bear market, we typically make close reference to each commodity market's current cash costs of production, as the marginal costs of production is an important guide for price floors. If the market price falls below the marginal cost of production for a substantial length of time (generally 3-6 months), the commodity's total production capacity is at risk of being cut. Therefore, in a weak demand growth scenario, the marginal cost of production tends to offer price support.

With the large margins and benchmark pricing custom that once characterized the iron ore and metallurgical coal trades, analysis of marginal costs of production in a bear market was never a relevant exercise for price forecasting.

But since the inaugural quarterly deals for iron ore & met-coal were settled in April, and the spot price weakness that has prevailed since then – cost curves suddenly matter to our forecasts.

Iron ore: floor of US$100/t fob

Guided by our current set of industry cost curves (2010Q1 *Metalytics* data; see *Appendix*), iron ore's marginal cost of production is represented by pellets production in India, small fines in Australia, and about 150-200Mt of high cost, very low grade mine production capacity in China. China's marginal cost of production is not well known to the trade. It was tested in Q109, when the India-China spot price collapsed to US$60/t cfr; when reported spot passed through US$80-90/t cfr, monthly domestic production rates collapsed as imports lifted.

Given these India/Australia data, China's price signals (proxy for unavailable production & cost data by operation), and the lift in costs later in 2009 – we estimate a marginal cost of production for trade of US$100/t fob fines Aust. (US$110/t cfr fines China). This level should offer a stable short-term floor for spot prices and indices. Current spot prices are: US$112/t fob Aust. (+12%); US$119/t cfr China. Given this, the downside from here appears limited.

Hard coking coal: floor of US$150/t fob

Similar analysis of the available cost data for metallurgical coals (2009 *AME* data; includes HCC, PCIs, SSCC; see *Appendix*), suggests that US$110/t fob – the marginal cost of production for trade – is a reasonable floor, well below the current spot price of US$186/t fob. While spot's price did fall to US$100/t fob in Dec-08, when global steel production rates collapsed, it is likely this implied floor of the cost data is too low.

The 2009 *AME* data does not include export sources that have entered the market since the price moved to US$130-300/t fob (extra 5-6Mtpy from US; 20Mtpy for the trade; +8% in 2 years). Our estimate of the marginal cost of production from new US supply sources is US$150/t (based on recent UBS consulting work). We use this as our estimate of the medium-term price floor for hard coking coal, from which lower grade met-coal prices are primarily based. Current spot is US$186/t (+24%; has flattened, short-term floor US$180/t fob).

Benchmark-to-index: a necessary change

Price mechanism transition was inevitable. Now, it's also inexorable.

Over the last 5 years, the number of players on both the supply- and demand-sides of the iron ore and met-coal markets has lifted rapidly, and the market has become persistently tight – such that the annual benchmark began failing in its capacity to fully, efficiently value the trade.

Given the fundamental evolution of the trade, the market shift from the annual benchmark to quarterly pricing for iron ore and met-coal markets was inevitable. Furthermore, now that it has begun, the process is inexorable – many players (traders & investors, not just producers) are now pushing for this change to pricing to occur. The shift will be difficult to reverse.

That's because spot indices better reflect the value of trade. As the volumes sold into this trade increases, and forward markets evolve – then all trade players will be able to manage price risks in a more sophisticated manner, compared with the benchmark.

It took 15 years for thermal to be a 50% spot market. Iron ore & met-coal will probably take less time than that.

How long will the transition from contract (quarterly) to spot index take? The best analogy for both iron ore and met-coal is the seaborne thermal coal trade. Mid-1990s, spot indices (Newcastle, Richard's Bay) were introduced to replace benchmark. Fifteen years later, about half of thermal coal's seaborne market is done through a spot trade. Given the range of common players, the conservatism of the Asian steel mills, and the long-term basis of the price contracts – the met-coal's trade may take the same period of time to evolve as thermal's.

The evolution may be much faster in iron ore, because the three major producers Vale, Rio Tinto and BHP Billiton – will insist on rolling off price contracts, and have already demonstrated some ability to make this change in recent months.

Steel mills are being encouraged to switch from quarterly lagged average prices to spot. It's a one-way street.

One likely method to encourage mills to accept shorter term/spot index contracts has been suggested by our industry contacts: given the recent weakness in the iron ore spot prices/indices, producers can offer a spot/index priced contract, now lower than the quarterly lagged average – but the mills cannot return to longer-term price contracts.

Long-term, which bulk is better?

Assuming that trade fundamentals & prices all stabilise in the medium- to long-run, then the only remaining value-driving factor that distinguishes the bulks relates to available resources.

Both high-grade iron ore (>62%Fe) and high quality metallurgical coal (hard coking) are increasingly rare commodities by most measures and comparisons; discoveries are rare; global production rate is still greater than resource replacement rate; current suite of known resources already under management; both markets feature consolidated supply-sides; substitutes (ie. either as reductant/iron units in steel production, or steel in construction/infrastructure applications) are limited. Global thermal coal resources are not as limited; occurs widely; managed by wide range of entities; more easily substituted (gas, uranium, etc.).

Our top bulk commodity picks on a 5-10 year basis: 1. met-coals (i.e. most preferred); 2. iron ore; 3. thermal coal

Breaking the chain

Will the alumina/aluminium link break?

We now believe that global alumina producers are increasingly likely to break the link between contract alumina prices and the market for aluminium.

Alumina stands out as the bulk commodity which has failed to capitalise on China. Surging China demand for iron ore, met- and thermal coal – coupled with stocking cycles in the developed world – have led to strong price hikes in these minerals since Q109, and exceptional returns at their producers.

China's alumina demand has also risen sharply, now that Chalco restarted all aluminium capacity idled last March, and as more smelting capacity comes on-line. But term contract alumina pricing remains at 11-13% of aluminium's price.

Why has alumina failed to join in? Much comes down to industry structure, corporate culture and the practicalities of aluminium production.

The Hall-Heroult aluminium production process is continuous. It is both expensive and highly damaging to the potlines to turn production on-and-off. Consequently, all smelters seek long-term contracts to ensure security of supply. The spot market is no more than 15% of global offtake.

At the same time, Alcoa, the dominant alumina producer, is almost fully integrated in terms of its ownership share of alumina assets (owns 60% of AWAC JV; Alumina Ltd owns 40%), but it maintains control over the marketing rights to the remaining 6mtpy of alumina in the JV.

Over the past two decades, Alcoa has been operating a 'full service' policy with its customers – actively developing new products and working with its largest customers to maximise aluminium penetration in its main end-uses: transport, construction, packaging, foil and engineering products.

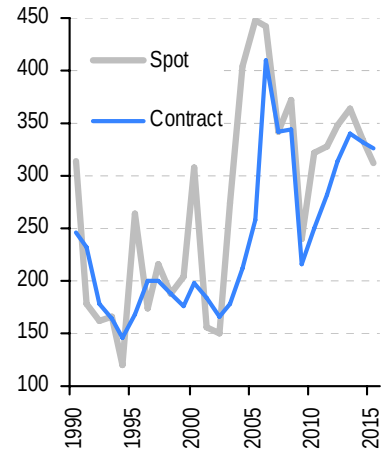
This philosophy has been particularly important in the auto market in the US, where high product development costs, exacting safety requirements and the need for retooling in a capital-constrained industry means that there is a long lead time between the proposal of a new aluminium part and its adoption.

There are also significant cost issues – as automakers trade off the usually higher cost of aluminium (vs steel) – with the benefits of lighter weight.

For many years, Alcoa's control of the AWAC JV (with Alumina Ltd, the junior partner) has put it in the dominant position in the alumina market. Consequently, its lack of interest in changing the prevailing contract set-up has forestalled any attempts to move to floating alumina contract or even to spot pricing.

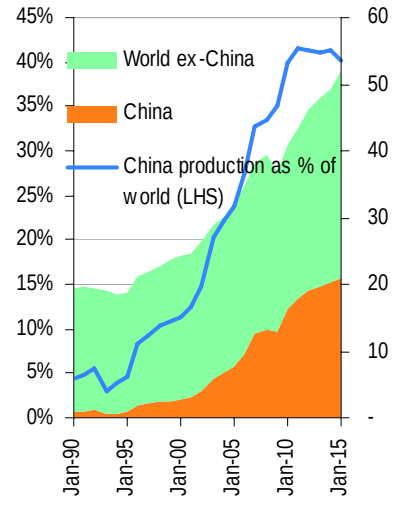
But the past 10 years has seen a sea change in the structure of both the aluminium and alumina markets. China has increased its aluminium production by 13.6mt over the past decade, out of a total increase of 16.6mt. It now accounts for 40% of global production, compared to just 11% in 2000. We believe that the rapid advance of China's aluminium production is at least partly related to the easy credit conditions in China, especially for those firms that have

Chart 25: Alumina Price (US ¢/lb)



Source: Bloomberg

Chart 26: China's share of global aluminium production



Source: UBS research, Brook Hunt

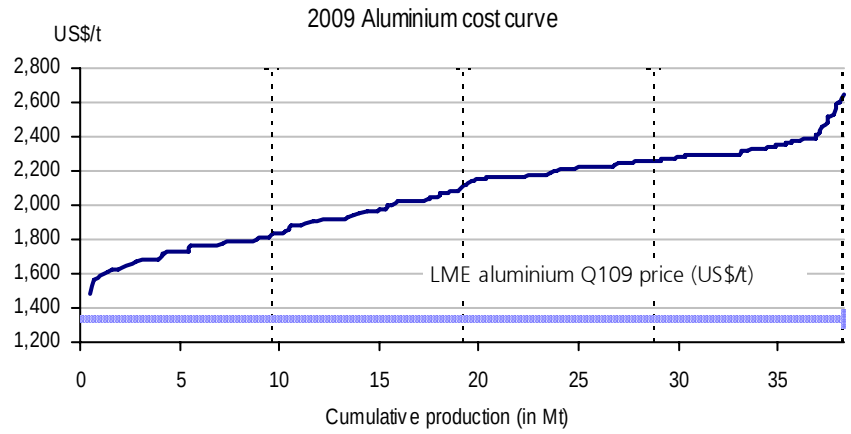
found favour with local officials, and who have access to cheap or subsidised electricity.

It is therefore no surprise that the rise of China as an aluminium industry force has coincided with a clear loss of discipline in the industry. Early 2009 highlighted the lack of discipline that has developed in the industry, as only 10% of capacity was shut in Q109, despite the fact that the entire cost curve was under water at the time.

That lack of discipline is also revealed by the reluctance of developed world producers to reduce output and resell power even in high power cost jurisdictions like South Africa, Italy, Norway and parts of the US.

Chart 27: Aluminium cost curve and Q1 2009 average price

There were only limited aluminium shutdowns, despite the fact that the whole industry was underwater in Q109



Source: Brook Hunt, LME

In the alumina industry itself China's expansion over the last decade has predominantly added capacity to the top half of the cost curve, raising average production costs and the 'cost-push' element to pricing – as smelters run at sufficient utilisation rates to take that alumina.

And the recent revolution in iron ore contract pricing towards shorter contracts and spot indices has highlighted the potential to deliver returns in all concentrated bulk markets, at the expense of an ill-disciplined and diffuse processing end. At the same time, developments in the alumina industry have highlighted the potential for greater price discipline, and greater returns.

The table below shows the net positions of the world's major alumina producers. Collective net long position of the producers is concentrated among 19 players.

But there are gathering signs that other industry players are intent on changing the terms for alumina pricing.

Industry players are intent on a change to alumina pricing.

- BHP has sought to drive a change in contract pricing, but with little success. Its alumina surplus, at around 2Mt, is too small to drive a change in contract pricing terms.
- Rio Tinto is keen to see alumina contract pricing change. However, after its purchase of Alcan (net short alumina), Rio Tinto's net long alumina position has fallen to 1.6mtpy.

- We understand that Hydro Aluminium is ending its objection to a pricing regime change, as its purchase of Vale's alumina assets will take it to a net long alumina position.
- Chalco has raised contract prices for third parties up to an average of 17% of the aluminium price.

But the most important shift has come from Alumina Ltd and Alcoa, the AWAC JV partners. Over the past two years AWAC has been moving to shorter term contracts with a higher linkage to the aluminium price. AWC has now directly stated to us that it intends to push for a move away from linked contract prices to a form of lagged spot pricing, and Platts is setting up a spot index to act as a benchmark.

We understand that Alcoa management is increasingly open to the view that it will improve shareholder returns by moving to a form of spot based contracts for its alumina sales. This is a large shift from the attitude prevalent under Alcoa's previous management regime.

Consequently we believe that the industry will now move to spot based contract pricing as existing contracts roll off. There are many contracts in place, and the AWAC JV has some large cost-plus contracts lasting for the full 5 years of our forecast period. So in our contract price forecasts we assume that a fifth of all contracts move over to spot contracts in each of the next 5 years.

Table 6: Net Alumina Position of Major Aluminium and Alumina Producers

Company	Alumina Capacity (ktpa)	Aluminium Capacity (ktpa)	Net Alumina (kpta)*
Alumina Limited	6,800	-	6,800
UC Rusal	13,948	4,203	5,814
Xinfa Aluminium Electrical	3,700	-	3,700
Chalco	11,280	3,970	3,598
Vale	3,593	232	3,144
Weiqiao Textile Group	4,000	550	2,936
East Hope	2,500	-	2,500
BHP Billiton	4,500	1,300	1,985
Hangzhou Jingjiang Group	1,800	-	1,800
Rio Tinto	8,400	3,500	1,628
Alcoa	10,200	4,500	1,493
Glencore	2,813	711	1,437
ENRC	1,600	125	1,358
Government of Venezuela	1,160	-	1,160
Nalco	1,658	461	766
Apollo Managment	1,200	263	691
Hindustan Aluminium	1,500	488	556
CBA	1,154	475	235
Vedanta Resources	993	510	6
Yunnan Aluminium	-	400	(774)
Yichuan Electrical	-	400	(774)
Qingtongxia Aluminium	-	430	(832)
Huomei Hongjun	-	430	(832)
Century Aluminum	-	440	(851)
Hydro Aluminium	2,144	1,600	(952)
Alba	-	870	(1,683)
Dubal	-	992	(1,920)
Henan Shenhuo Group	-	1,000	(1,935)

* Based on the assumption of 1t aluminium requiring 1.935t alumina.

Source: Company Reports, Brook Hunt, UBS Research.

Commodity Review
Copper
Beyond the restock

Western world copper demand growth in H110 was spectacular. Japanese copper semis production lifted north of 100% y/y in March and April, Western European demand growth was up in the high teens y/y. But our channel checks now tell us that restocking is over. We now anticipate a sequential decline in offtake over the summer, and lacklustre demand for much of the rest of the year.

In China, H1 end-demand was robust, but this was offset by trader destocking in April-May: we now forecast a 10% decline in China's 2H10 offtake.

Mine production remains constrained, with disruptions year-to-date now greater than our 1Mt disruption allowance. The lengthy strike (likely soon to be resolved) at Vale's Canadian nickel operations, and the slow restart at Grupo Mexico's Cananea, contributed to the higher-than-expected disruption rate.

We look for copper prices to stabilise over the summer, as China trader buying offsets weak end-demand, before a more sustained recovery later in the year, into 2011 – as China's seasonal buying picks up.

Supply-demand outlook

The robust rebound in ex-China demand in 1H10, following 2009's aggressive destocking, has helped to propel the copper market into a 400kt deficit in 2010. We now anticipate that a moderate pace of demand growth in the West, solid further improvements in offtake from China and the rest of the emerging markets – will support demand growth of 5.5% over the 2010-15 period.

On the supply side, we see continued constraints from the legacy of open pit mining, which will feature falling grades and rising costs over the forecast period. We also anticipate ongoing production disruptions in the order of 1Mtpy, due to strikes, difficult local conditions in the DRC and other growth areas.

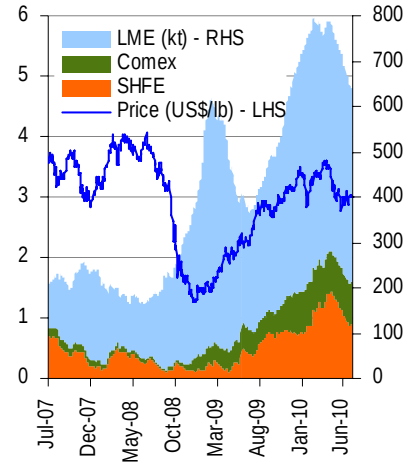
The major green-brownfield projects; Vale's Chapada (100ktpy) and Salobo (100ktpy), Codelco's El Teniente (+75ktpy), Los Bronces (+250ktpy) and Antofagasta's Antamina (+100ktpy) will generate average output growth of 5.5%, despite expectations of disruptions/declining grades at the mature mines.

UBS price forecast

We currently forecast an average global copper price for 2010 of US$3.2/lb (US$7,000/t), a 35% y/y lift (vs. spot's US$3.0/lb; $6,600/t). We have pared our 2010 forecast to reflect early withdrawal from trade of China; and further weakness in trade in traditional copper-consuming markets of the US & Europe.

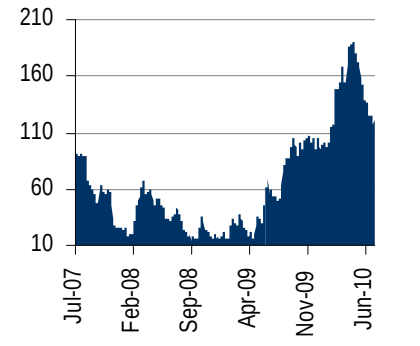
We forecast copper prices to lift to US$3.5/lb by mid-2011 ($3.45/lb avg for 2011) as stability in global economic activity improves, supporting trade flows. Copper's price is forecast to eventually ease from these high levels by 2012, to US$3.3/lb ($7,275/t), declining further thereafter to a longer-term price of US$2.30/lb ($5,035/t; 2015; US$2.0/lb real) – as mine supply responds to these elevated prices.

Chart 28: Copper exchange inventories vs. LME price (kt, US$/lb)



Source: Bloomberg, LME, SHFE, Comex

Chart 29: SHFE copper inventories (kt)

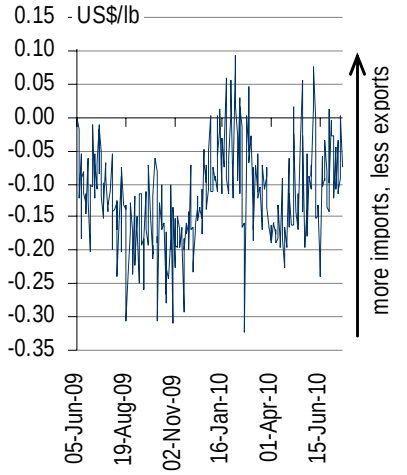


Source: Bloomberg, SHFE

Market review

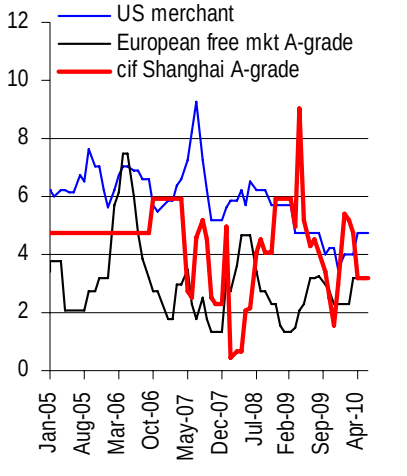
- We previously forecast flat copper offtake from China in 2010; that end demand would be up around 12%; that this would be offset by the fact that Chinas semi-manufactured product producers would end their restocking of 2009. However, we have now downgraded our offtake forecast to -2.5% for the year as a whole – most of which will be felt in the back-end of the year – to fully reflect the impact of the post-stimulus drop in demand – from infrastructure end-uses in particular.
- The action of China's physical traders is critical to copper's short-term outlook. In April and May, traders priced-in a chunk of the China slowdown, by selling inventory, a period when they normally build stocks. This selling, during a period of strong end-demand, effectively priced in the prospective 2H10 demand weakness early.
- We estimate that China traders have entered the summer with copper inventories 250-300kt lower than the seasonal norm (relative to absolute demand levels). Therefore, they are cashed up and ready to buy 'hand-to-mouth'. We believe that China's traders will begin buying during the summer, offsetting weak end demand over the period.
- A good sign of traders positioning and intentions is the Shanghai to LME copper arbitrage. This moved negative (i.e .Shanghai moved to a discount to LME) in April and May – indicating a clear lack of interest in importing copper. The arbitrage has since returned close to parity, indicating a better appetite for imports – an unusually robust development for the summer.
- The end of restocking in the West will lead to sequential falls in demand in Q3, and then a flat performance in Q4. We have fully factored this into our price forecasts.
- Mine disruptions are running at around 120ktpy greater than our 1Mt 'disruption allowance' for the year. There has been industrial action at Collahausi, Ok Tedi and at Vale's operations at Sudbury and Voisey's Bay.
- While we believe that the Vale strikes are close to resolution, we suspect that it will take six months to achieve a full ramp up of operations. At Grupo Mexico's Cananea, there will be a slow restart that could delay reopening by six months after striking workers inflicted significant site damage.
- Oyu Tolgoi is now officially going ahead, and it is now in our base case forecast.

Chart 30: SHFE 3mth Cu Prem/-Disc to LME (last 3 months)



Source: SHFE, LME, Bloomberg

Chart 31: Copper merchant premia (US¢/lb)



Source: Bloomberg, Metal Bulletin

Table 7: Global refined copper market

Mt	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
World-ex China								
Production	14.7	14.2	14.0	14.1	14.9	15.3	15.5	16.5
YoY growth	0.2%	-3.0%	-1.9%	1.1%	5.7%	2.8%	1.0%	6.5%
Consumption	13.0	10.9	12.1	12.6	13.0	13.5	14.0	14.5
YoY growth	-3.4%	-15.8%	11.1%	3.6%	3.7%	3.6%	3.6%	3.6%
Market Balance	1.7	3.3	1.8	1.6	1.9	1.8	1.5	2.0
China								
Production	3.8	4.2	4.7	5.5	6.0	6.7	8.0	8.0
YoY growth	8.4%	8.4%	13.5%	17.4%	8.7%	11.0%	19.0%	1.1%
Consumption	5.1	7.2	7.0	7.7	8.5	9.1	9.8	10.4
YoY growth	10.9%	41.2%	-3.0%	10.0%	10.0%	8.0%	7.0%	6.0%
Market Balance	-1.3	-3.0	-2.3	-2.1	-2.4	-2.4	-1.8	-2.3
World								
Production	18.5	18.4	18.7	19.7	20.9	22.0	23.4	24.5
YoY growth	1.8%	-0.6%	1.6%	5.2%	6.5%	5.1%	6.5%	4.7%
Consumption	18.1	18.1	19.1	20.2	21.5	22.6	23.7	24.8
YoY growth	0.2%	0.3%	5.5%	5.9%	6.1%	5.3%	5.0%	4.6%
Market Balance	0.4	0.3	-0.4	-0.6	-0.5	-0.6	-0.3	-0.3

Source: UBS Research

Aluminium

Production cuts loom large

The 3-month aluminium contract is currently trading at 93.2¢/lb. We estimate that, at current pricing, 4.6Mt-5.7Mt of Chinese capacity is running at a cash loss. This estimate is reinforced by recent comments from industry leaders that up to 6Mt of Chinese capacity (~12% of global capacity) is operating at a loss. As such, we expect annualised capacity of at least 1Mt (~2.4% of global capacity) to be taken offline in the second half of 2010.

Supply-demand outlook

While our adjustments to supply and consumption forecasts were not large, together they result in the aluminium market moving to a slight oversupply in 2010 compared to our previous forecast of a mild tightening. Following our revisions, we expect to see a surplus of 1.9Mt in 2010, with supply of 40.9Mt exceeding demand of 39.0Mt. Note that if the June production figure is extrapolated over the second half of 2010, production would be 40.7Mt.

Our forecast Aluminium production growth for 2010 increased to 10.9% y/y, compared to our prior forecast of 7.5% y/y. We now believe that the risk of power-shortage induced production cuts in South Africa has abated, as BHP and Eskom appear to be managing the issue without significant disruption to supply.

We continue to expect Chinese consumption will be driven by the affects of the inventory cycle. As illustrated in prior notes, the end to the re-stocking of inventories can partially offset underlying demand. Our economics team (Tao Wang, et al) currently forecast China's industrial production to grow by 13.5% in 2010, compared to our forecast growth in Chinese aluminium consumption of 10.0%. We expect aluminium growth to track below IP growth due to the affects of the end of re-stocking which occurred in 2009.

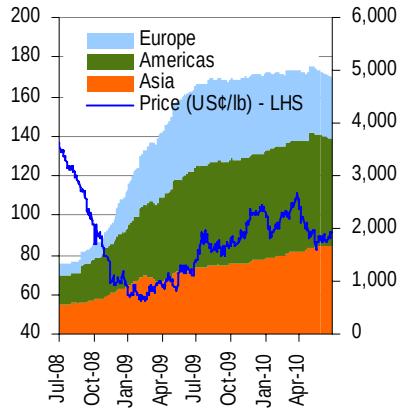
UBS price forecast

We are currently forecasting an aluminium 3 month contract price of US96.4¢/lb for 2010 (US$2,125/t), a 25.2% y/y increase. This is based on forecasts of 93.7¢ and 95.8¢ in the 3rd and 4th quarter of 2010 respectively, following a 1H10 average of 98.0¢. The current 3 month contract sits at 93.2¢. We expect aluminium to reach 113¢ by the end of 2011 after averaging 107¢ for that year.

Market review

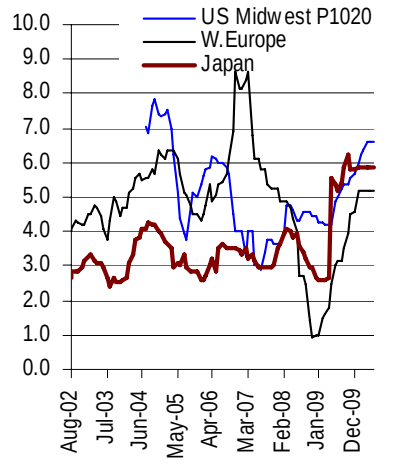
- Global exchange inventories (LME, SHFE, Comex) remain below 5Mt at 4.87Mt, after peaking at 5.08Mt on May 20th. Europe drew down 108kt of inventories; Asia added 23kt in the last two months; and an 80kt fall in North America following a spike in May, resulting in a broader trend of flat-to-down inventories for this region.
- If a downward trend in North American inventory materialises, this could support aluminium prices given that this region accounts for 43% of exchange inventories, and has been building inventories since late 2006. Tempering this are concerns regarding the overhang of on and off warrant inventories held by Glencore and others, and the potential that stocks may return to market as profits from the carry trade have reduced since 2009.

Chart 32: Aluminium exchange inventories vs LME price (kt, US¢/lb)



Source: Bloomberg, LME, SHFE, Comex

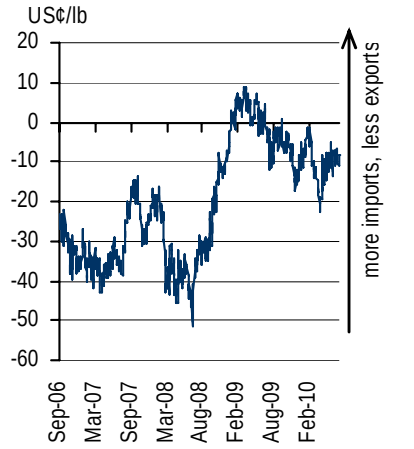
Chart 33: Al merchant premia (US¢/lb)



Source: Bloomberg, Metal Bulletin

- IAI inventories grew for the third month in a row in May, reaching 2.34Mt. While this is not positive for pricing, the historical stability in the IAI reading (relative to exchange inventories) and the 2 month lag in the data means that pricing is less sensitive to this figure. The inventory data for June is due for release in late July (~28th).
- Global aluminium production for June was 3.4Mt (41.1Mt annualised). This was a 53kt (1.5%) drop on May, although production is up 17.1% yoy. Growth of 6Mt in both China and the Gulf offset cuts in all other regions. The production growth in China continues to irritate Western producers (see below) who believe that significant capacity in China is operating at a loss.
- Industry leaders, including the head of UC Rusal (Oleg Deripaska) and Alcoa's CEO (Klaus Kleinfeld), have been quoted over the last two weeks in their belief of stronger aluminium prices.
  - Deripaska expects a recovery in pricing to US$2,400/t-US$2,700/t (108¢/lb-123¢/lb) in 2011.
  - Kleinfeld estimates that ~6Mt (12% of current global capacity) of aluminium capacity in China is currently operating at a loss.
  - Kleinfeld expects 1.0Mt-1.5Mt to come offline in the third quarter, while Deripaska estimates that 2-3Mt will close due to smelter economics.

Chart 34: SHFE 3m Al Prem/-Disc to LME (US¢/lb; 3 months)



Source: SHFE, Bloomberg

Chart 35: Global refined aluminium market

Mt	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
World Position								
World Production	39.5	36.9	40.9	43.2	46.2	48.1	49.2	52.0
% change	3.8%	-6.6%	10.9%	5.7%	7.0%	4.0%	2.2%	5.7%
World Consumption	37.3	35.3	39.0	42.4	44.9	47.4	50.2	53.2
% change	-1.3%	-5.4%	10.5%	8.6%	5.8%	5.8%	5.8%	5.9%
World Balance	2.1	1.5	1.9	0.8	1.4	0.7	-1.0	-1.2
World ex-China Position								
World ex-China Production	26.3	23.9	24.6	25.2	27.1	28.3	28.8	31.1
% change	2.9%	-9.1%	2.7%	2.8%	7.5%	4.5%	1.7%	8.0%
World ex-China Consumption	24.8	20.9	23.2	25.0	25.8	26.7	27.6	28.6
% change	-2.7%	-15.5%	10.8%	7.6%	3.5%	3.4%	3.4%	3.4%
World ex-China Balance	1.5	3.0	1.3	0.3	1.3	1.6	1.2	2.6
China Position								
China Production	13.2	13.0	16.3	18.0	19.1	19.7	20.3	20.9
YoY growth	5.5%	-1.6%	26.0%	10.1%	6.3%	3.3%	3.1%	2.5%
China Demand	12.5	14.4	15.8	17.4	19.0	20.7	22.6	24.6
YoY growth	1.7%	14.7%	10.0%	10.2%	9.0%	9.0%	9.0%	9.0%
China Balance	0.6	-1.4	0.5	0.5	0.1	-1.0	-2.2	-3.8
Aluminium Price 3-mth (¢/lb)	119.2	77.0	96.4	107.4	113.3	118.5	123.6	128.6

Source: UBS Research

Alumina

More restarts

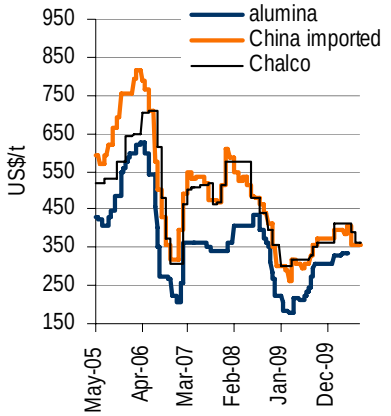
Although the spot alumina market accounts for no more than 15% of sales, we believe that reviewing spot market prices gives an indication of the balance of the broader market. After a steady strengthening from US$305/t to $335/t throughout 2010, spot alumina prices retreated in July to $315/t (FOB Aust.).

This drop was likely due to sustained weakness in aluminium prices, and the news that Rusal was beginning to ramp up production at its Ewarton refinery in Jamaica. The Ewarton restart was originally scheduled for early June, however the ramp up was delayed due to violence in Jamaica, according to Rusal. Rusal now expect the 650ktpa capacity refinery to be fully functional by the end of summer.

The restart of the Ewarton refinery, together with upward revisions to our forecast production out of China, has increased our alumina supply expectation to 81.4Mt in 2010. This results in our forecast oversupply of 2.26Mt for 2010, given our demand estimate of 79.1Mt.

We expect alumina capacity utilisation of 84% in 2010. The alumina industry has responded quickly to demand dynamics from the smelters, providing there is sufficient capacity we expect that spot pricing will remain around 15% to 16% of the three month aluminium price for the remainder of 2010. Alumina producers looking to roll contracts may be able to translate this into a lift in contract pricing through 2010 and 2011. We expect alumina pricing to remain subdued in the near term, as we estimate capacity utilisation will remain well below the 95% level, which has historically been the catalyst for pricing spikes.

Chart 36: Alumina spot prices



Source: Metal Bulletin, Bloomberg

Table 8: Global alumina market

Mt	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
World ex-China Position								
World ex-China aluminium production	26.3	23.9	24.6	25.2	27.1	28.3	28.8	31.1
Total Demand	50.9	46.3	47.5	48.9	52.5	54.9	55.8	60.2
Total Supply	56.6	50.1	54.4	57.7	62.4	65.8	67.0	68.8
Market Balance	5.7	3.9	6.9	8.8	9.9	11.0	11.2	8.5
China Position								
China aluminium production	13.2	13.0	16.3	18.0	19.1	19.7	20.3	20.9
China alumina demand	25.5	25.1	31.6	34.8	37.0	38.2	39.4	40.4
China alumina supply	21.8	23.1	30.3	37.0	39.6	40.3	40.6	40.7
Market Balance	-3.7	-2.0	-1.3	2.2	2.6	2.1	1.2	0.3
World Position								
Global primary production	39.5	36.9	40.9	43.2	46.2	48.1	49.2	52.0
Global alumina demand	76.4	71.4	79.1	83.7	89.5	93.1	95.2	100.6
Global alumina supply Intentions	78.5	73.3	84.8	94.7	102.0	106.2	107.5	109.4
Global alumina supply adjustment	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9
Effective Global alumina supply	78.5	73.3	81.4	82.4	88.5	95.0	99.5	105.1
Supply demand balance	2.08	1.91	2.26	-1.26	-0.95	1.96	4.32	4.48
Alumina Contract Price (US$/t)	343.9	216.8	249.6	283.0	314.1	340.7	331.5	325.8
Alumina Spot Price (US$/t)	371.9	240.5	321.5	328.8	348.8	365.0	335.0	312.1

Source: UBS Research

Nickel

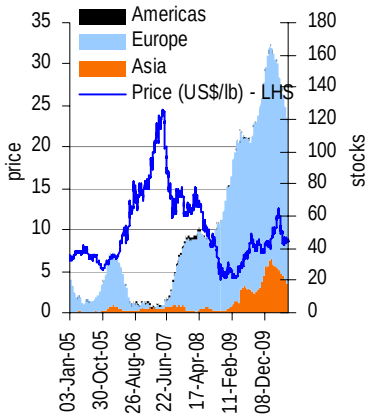
Supply-side constraints, mostly

Following Europe's long-awaited (and price-driving) restocking event in Q1 this year, little else has occurred on nickel's demand-side to support its price. China's import flows are certainly large (NPI economic at current price) but they are generally stable, and the US stainless market is dormant. So nickel's price depends largely on supply-side constraints.

These include Vale's recently settled Sudbury strike (year-long event), replaced by a contract dispute at its Voisey's Bay operation; and labour issues at Xstrata's Kristiansand facility in Norway. These events have been offset by the fact that big projects loom large (Goro, Koniambo, Onca-Puma), and LME inventory levels are still high. So nickel's price has fallen 30% since its mid-April high, to just US$8.7/lb, close to the industry's marginal cost of production.

Downstream in stainless steel, where two-thirds of the world's primary nickel is consumed, stainless prices and demand growth are both weak. We expect stainless steel production rates to decline in Q3 (i.e. seasonal, as with all steel markets), undermining nickel demand – with a lift in material flows mid-Q4.

Chart 37: Nickel price & inventories (US$/lb; kt LME)



Source: Bloomberg, LME, SHFE, Comex

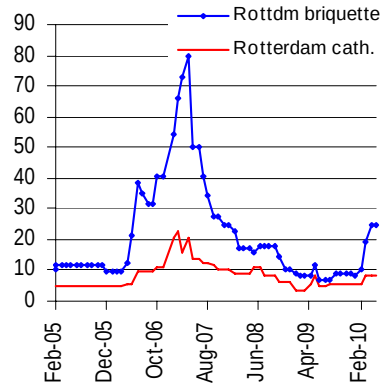
Supply-demand outlook

Our nickel supply-demand forecasts highlight a 4.1-5.2% per year lift in global primary nickel demand out to 2015, from 1.40Mt in 2010 to 1.74Mt in 2015. Refined nickel supply is set to lift from 1.37Mt in 2010 by up to 5% per year to 1.67Mt in 2015.

We forecast a deficit of 32kt this year, reflecting Sudbury offline; returning to balance next year, with surpluses from 2012 – a view that supports a short-term stable price forecast.

This outlook features 7-9% demand growth in China, moving from 377kt in 2014 to 550kt by 2015. The fact that its domestic supply growth only meets 25% of this demand growth, we expect persistent, strong import demand growth: a good outcome for ex-China producers. China's demand growth actually receives support from Europe & the US in our forecasts: ex-China demand is set to lift 2.9-3.8% to 2015 to top 1.17Mt.

Chart 38: Nickel merchant premia (US¢/lb); next move? Probably down.



Source: Bloomberg, Metal Bulletin

UBS price forecast

We currently forecast an average global nickel price for 2010 of US$9.25/lb (US$20,400/t), a 39% y-o-y lift (vs. spot's US$8.7/lb; $19,180/t), pared relative to our May-10 forecast to reflect the recent fall in European demand growth.

Beyond 2010, our forecasts are unchanged: we expect nickel's price to slip to US$9.30/lb in 2011, as Sudbury comes back online; 60ktpa Goro's expansion continues; and NPI production capacity in China lifts further. Nickel's price forecast holds above US$9/lb ($19,800/t) out to 2015.

High LME inventories of 120kt is regarded as a bear-point for the trade, but the fact that most of this material is the least-preferred full-plate cathode, and that stock levels have been declining steadily since Q1 – are price supportive.

Market review

- China's stainless steel producers began cutting output in May-10, in response to cancelled orders and deferrals from downstream distributors. We suspect this shift reflected growing industry concern over the central govt's constraint on trade activity. Production rates are also declining at mills in Japan & Taiwan.

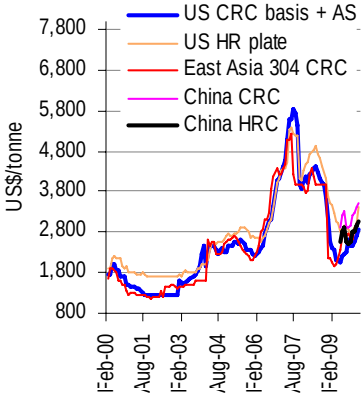
- The restocking event in Europe, a primary driver of nickel's price to its mid-April peak of US$12.4/lb, was short-lived. As soon as the Southern European debt drama appeared, stainless producers & traders withdrew from trade, starting the price slide. By June, Europe's distributors were reducing orders. It is now unlikely that this region will influence nickel's price directly before 2011.

- The US reported a modest restocking event too, with the AISI reporting a peak in stainless shipments in Mar-10. Downstream, US distributors were also busy in Q1, but for the stainless supply chain – activity subsided again by mid-year. Rising distributor stocks imply consumer demand remains weak, leading into the typically weak Q3.

- Vale's flagship project, US$4.3bn, 60ktpa HPAL Goro in New Caledonia, is still not at production status, because of commissioning difficulties (autoclave). Vale's expects to deliver 20ktpa of nickel from Goro this year.

- Late July, contract talks between Vale and striking mine-mill employees represented by the United Steelworkers at Voisey's Bay, failed over a disagreement over the bonus scheme. In early July, the workers in Ontario voted to approve a new labour agreement, ending the year-long strike.

Chart 39: Stainless steel (304) prices



Source: Bloomberg

Table 9: Global primary nickel market

Kt	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
World ex-China								
World ex-China production	1,435	1,234	1,261	1,371	1,452	1,529	1,529	1,559
YoY growth	-4.9%	-14.0%	2.1%	8.7%	5.9%	5.3%	0.0%	1.9%
World ex-China consumption	1,014	900	1,027	1,066	1,097	1,129	1,161	1,195
YoY growth	-4.4%	-11.3%	14.1%	3.7%	3.0%	2.8%	2.9%	2.9%
World ex-China Balance	420	334	233	305	354	400	368	364
China								
China Supply	82	90	111	112	112	112	112	112
YoY growth	5.6%	9.9%	23.8%	0.9%	0.0%	0.0%	0.0%	0.0%
China Demand	286	377	377	411	444	479	513	549
YoY growth	-10.0%	31.7%	0.0%	9.0%	8.0%	8.0%	7.0%	7.0%
Market Balance	-205	-287	-266	-299	-332	-367	-401	-437
World								
Total Production	1,516	1,324	1,372	1,483	1,564	1,641	1,641	1,671
YoY growth	-4.4%	-12.7%	3.6%	8.1%	5.5%	4.9%	0.0%	1.8%
Total Demand	1,301	1,277	1,404	1,477	1,541	1,608	1,674	1,743
YoY growth	-5.7%	-1.8%	10.0%	5.2%	4.4%	4.3%	4.1%	4.2%
Market Balance	216	47	-32	6	23	33	-33	-73

Source: UBS Research

Zinc

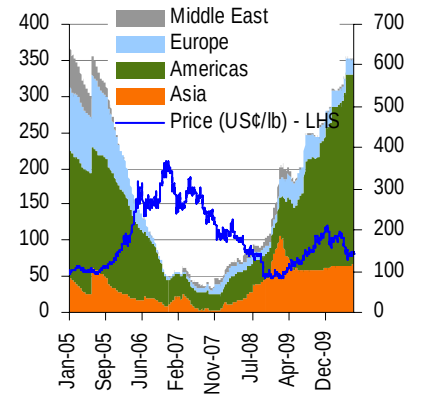
Lots of inventory (but need more mines)

China's robust concentrate imports, coupled with struggling global mine supply, are two emerging themes for the zinc market – presenting upside price risk over the medium-term (2-3 years). But short-term, the market's entirely focused on high LME inventory levels, which now weigh heavily on the metal's price.

The relentless lift in LME (620kt) and SHFE (250kt) inventories has finally eased, but with 865kt of material to work through, it's difficult to see short-term upside for the price. Short-covering has seen the price lift in starts over recent months, and excess smelting capacity in China has created tension in the concentrate trade – but all else appears subdued. The dramatic lift in inventories is probably partly fed by galvanisers returning metal to the market to keep storage costs down.

The metal trade needs a sustained lift in China's steel sector (half of zinc supply goes to galvanisers) for short-term support; we expect little immediate support from the European & US steel and alloy markets.

Chart 40:LME zinc stocks vs. price (kt, US¢/lb)



Source: Bloomberg, LME

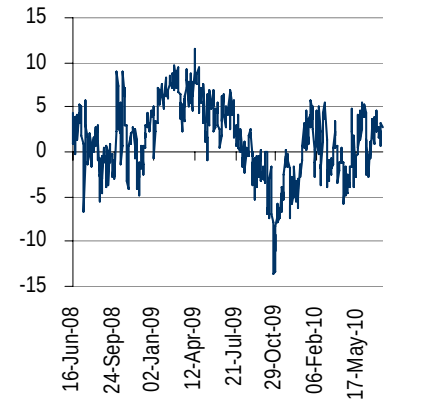
Supply-demand outlook

Our zinc fundamentals forecast has global refined metal demand out to 2015 lifting 5.4-6.5% per year, from 12.1Mt in 2010 to 16.1Mt in 2015. Forecast global refined supply lifts from 11.9MtMt in 2010 at 4.6-7% per year to reach 15.8Mt in 2015. We forecast deficits of 120-320kt/year (0.8-2.5% of demand) out to 2015.

UBS price forecast

We currently forecast an average global zinc price for 2010 of US$0.93/lb (US$2,050/t), a 23% y/y lift (vs. spot's US$0.81/lb; $1,785/t). We expect zinc's price to lift to over US$1.1/lb by 2012, as China becomes increasingly dependent on imported concentrates & metal, and as under-funded western world mine supply struggles. Zinc's price is forecast to decline beyond 2012 to an unchanged long-term price of US$0.75/lb.

Chart 41:SHFE:LME 3mth price differentials (US¢/lb)



Source: Bloomberg, UBS

Market review

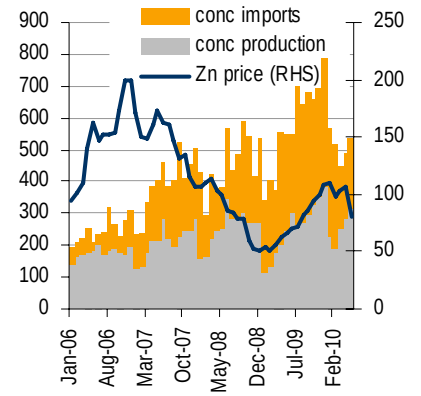
- Zinc's exchange inventories have been lifting steadily over the last 12 months, easing recently largely because of an improving China trade. There is now 620kt of metal with the LME (+13% during Q2), and 250kt with the SHFE (stable over Q2). The greatest lifts on the LME are being reported in the US, reflecting general weakness in trade.
- The metal's price looks weak, but it's different in the supply chain: zinc's spot treatment charges have been falling year-to-date, now a low US$95/t conc., with realized TCs slipping to US$242/t conc. What's the driver here? China's strong import flows this year have drawn down concentrate supplies; smelters in the region are charging less to process miners' concentrates. Note, the spot trade only represents 20% of the market; smelters depend more on contract TC to make money. But when contract talks start year's end, guided by the spot trade – some smelters will be concerned about revenues.

- China's dominance of the global zinc concentrate trade appears set to persist. Trade and production data to date reveals that China's domestic mine supply is highly price sensitive, lifting sharply when the metal's global price moves above US80¢/lb (>critical cost of production; SHFE:LME differential key for smelter trade too). By May, China imported, 1.3Mt ytd (260kt/month), slightly below 2009's debt-funded trade, but still robust. Also, the data suggests China's local output is capped at 300kt/mth. China dependency on imports is likely to increase.

- Where's all of China zinc concentrates going? Record metal production. By May, China had produced 2.04Mt of metal, +35%yoy, with a record high of 452kt in May. It's unlikely this rate of output is sustainable (implies 12%yoy lift on a strong 2009 result), even though this output is partly offset by falling y/y import flows (total supply still +12%y/y). Expect lower production rates H2, falling concentrate imports.

- High profile zinc mine projects include Terramin's **Tala Hamza**, Algeria (DFS proceeding; M&I resource 51.1Mt 6.1% Pb+Zn; 2Mtpa output; more exploration targets in region); Kagara's **Vomacka**, Australia (Cu-Zn-Pb-Ag deposit); Jabiru Metals **Bentley**, Australia, underground 30ktpa zinc target; AGMK's **Khandiza**, Uzbekistan is a 33ktpa zinc operations.

Chart 42:China's zinc concentrate supply vs. price (kt/mth; US¢/lb)



Source: China Customs, Antaike

Table 10: Global zinc market

		2008	2009	2010	2011	2012	2013	2014	2015
Mine production (contained zn in conc)	mt	11.4	11.1	11.3	11.0	11.7	12.0	12.4	13.1
growth in mine production	%	3.2	-3.1	2.4	-2.7	5.6	2.7	4.0	5.2
Smelter capacity	mt	13.1	13.4	14.4	14.8	15.4	15.5	15.8	16.3
utilisation rate	%	88	84	81	82	86	93	96	98
Smelter production	mt	11.5	11.3	11.7	12.1	13.2	14.4	15.1	15.9
Secondary supplies	mt	0.9	0.7	0.8	0.8	0.9	0.9	0.9	0.9
Processing Losses	mt	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8
Zinc Conc. Demand	mt	11.3	11.2	11.6	12.1	13.2	14.3	15.1	15.9
Zinc Conc. Market Balance	mt	0.2	-0.1	-0.3	-1.1	-1.5	-2.4	-2.6	-2.8
Implied Conc. Stocks	mt	3.4	3.3	3.0	1.9	0.4	-2.0	-4.6	-7.4
---days consumption		109	108	94	58	10	-51	-112	-170
Surplus/Deficit as % of total demand	%	1.5%	-0.7%	-2.5%	-8.9%	-11.7%	-16.5%	-17.4%	-17.4%
Refined zinc production	mt	11.5	11.3	11.7	12.1	13.2	14.4	15.1	15.9
Refined zinc demand	mt	11.5	10.7	12.1	13.0	13.8	14.6	15.4	16.2
growth in zinc demand	%	0.0	-6.4	13.2	7.1	6.1	5.7	5.6	5.5
World IP growth	%	0.2	-7.2	6.1	5.2	4.0	5.0	3.0	3.0
ratio of growth: demand/IP	x	-0.1	0.9	2.2	1.4	1.5	1.1	1.9	1.8
Refined Zinc Market Balance	mt	0.1	0.5	-0.4	-0.8	-0.5	-0.2	-0.3	-0.3
Implied Refined stocks	mt	-1.6	-1.1	-1.5	-2.4	-2.9	-3.1	-3.4	-3.8
---days consumption		-52	-37	-46	-67	-78	-78	-81	-84
LME stocks	mt	0.3	0.5	0.4	0.3	0.2	0.2	0.2	0.3
LME price average	US¢/lb	85	75	115	117	110	98	85	86
LME price average	US$/t	1880	1662	2535	2579	2425	2161	1874	1896
LME price change y/y	%	-42.3	-11.6	52.5	1.7	-6.0	-10.9	-13.3	1.2
Surplus/Deficit as % of total demand	%	0.6%	5.1%	-3.7%	-6.5%	-4.0%	-1.4%	-1.9%	-2.1%

Source: UBS Research

Iron Ore

Steel seasonality exposure

All spot prices and indices of iron ore's seaborne trade declined throughout Q210, reflecting the impact of massive lifts to all steel raw material prices in April, the inability of steel mills to push most of these higher costs through to steel consumers and, most importantly – because we have entered the seasonally weaker H2CY, when global steel production growth rates slow (*Iron Ore & Coal: quarterly price forecasts*, 13-Apr-10).

Iron ore's highest profile spot price, the India-China trade, has now fallen almost 40% since its mid-April high, to just US$118/t cfr China. The shift is large, but our work on the trade's costs-of-production (*Bulks: what's the price downside?* 2-Jul-10) suggests that spot's downside is limited from here: in a short-term weak demand growth outlook, a reasonable price floor for iron ore's spot prices/indices is in the range of US$100-110/t cfr China.

Now with more than half of iron ore's seaborne trade being priced on a quarterly basis or less (since Mar-10), its various price signals should in some way reflect the underlying seasonality in steel production rates, rather than longer-term supply-demand fundamentals, as under the old annual benchmark mechanism. Prices have certainly weakened going into H210; we do not expect a trade-led recovery in prices until late Q4 – the next time steel mills restock.

Demand-supply outlook

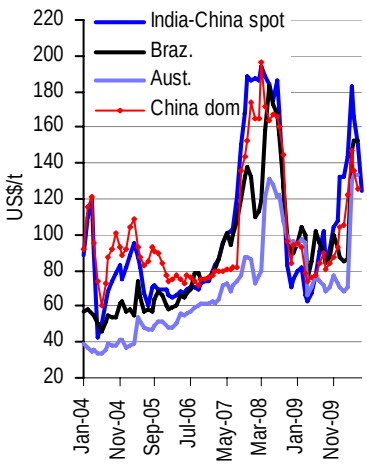
Despite the recent fall in the various spot prices and indices of the iron ore trade, we still see a deficit in both the global iron ore market and seaborne trades this year. The trades move closer to balance in 2011, but remain tight, before swinging into surplus by 2012. The surplus depends heavily on expansion programs of the Big 3: Vale, Rio Tinto and BHP Billiton.

Global demand in 2010 is forecast to lift 16% to 1,740Mt (from 2009's low); lifting a further 2-4%/year to 2015, totalling 2,010Mt: dominant drivers of this growth include China (+2% per year to 982Mt); CIS (+5% per year to 155Mt); Brazil (+5% per year to 83Mt; and Europe-15 (contracting to 109Mt from 140Mt). Similarly, seaborne demand is set to lift 12% in 2010 to 1,046Mt, rising 4-7%/year out to 2015 when it will be 1,330Mt – with this demand growth dominated by China's trade (63% of total by 2015).

Global iron ore supply is forecast to expand at 10% in 2010 to 1,694Mt, lifting annually at 4-7% to total 2,272Mt; over this period, seaborne supply is expected to lift 14%yoy in 2010, then 4-10%/year to top 1,488Mt in 2015. The huge expansion programs of Vale (6% per year to 2015, 425Mtpa), Rio Tinto (9% per year to 2015, 330Mtpa); BHP Billiton (16% per year, 245Mtpa); and Fortescue (capped at 55Mtpa in our model), are the main drivers of supply growth.

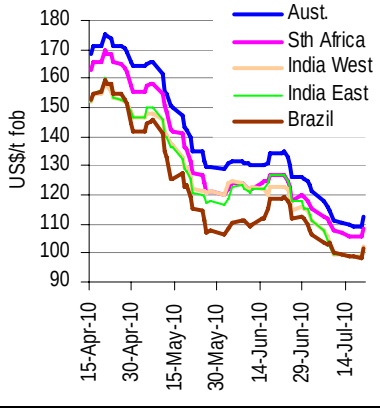
Indian exports are expected to attenuate going forward (from 120Mtpa), as domestic (and political) demand for this ore rises, and as it becomes marginalised by expanding, lower cost, alternative supplies.

Chart 43: China's landed iron ore prices (US$/t)



Source: CRU, Bloomberg, UBS

Chart 44:Iron ore spot indices



Source: Platts

Balancing these demand-supply outlooks, we forecast a deficit in CY10-11 of less than 3% for both markets. These markets return to balance by CY12; surpluses are forecast for years thereafter – as the massive supply expansion programmes of Vale, Rio and BHP Billiton enter the market, weighing on our longer-term price forecasts.

UBS price forecasts

By April this year, BHP Billiton and Vale had proposed methodologies for determining the quarterly price of iron ore. For BHP Billiton, the current quarter's price is based on the average of the previous quarter's relevant index price; for Vale, the quarter average lags by one month. We have incorporated these in our price file (guided by Platts indices).

- JFY10 (Apr-Jun): BHP Billiton, US$120/t fob; Vale US$95/t fob
- JFY10 (Jul-Sep) BHP Billiton, US$147/t fob; Vale US$128/t fob
- JFY10 (Oct-Dec) BHP Billiton, US$115/t fob; Vale US$109/t fob (quarter not complete; as at 19 July 2010)

Several complicating factors exist in this price list. Industry sources have suggested that these prices do not apply to all products; BHP Billiton has used Vale's calculation for some of its products, and is also prepared to allow its customers to switch to the lower spot price, providing there is never a return to contract pricing (BHP is advocate of pricing trade on indices, abandoning contracts);. Also, all three majors are probably still honouring some long-term price contracts of the old annual benchmark system (Japan's mills).

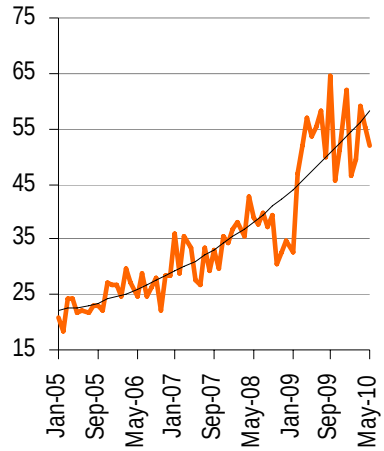
Our quarterly forecasts are intended to reflect the average price settled for that product in that particular quarter. We believe that quarterly forecasts will eventually reflect each product's weighted average index price, as actual quarterly pricing declines in importance.

Attempting to acknowledge the transition in product pricing, we forecast a 25%qoq fall in Q4JFY10 (Oct-Dec) prices (BHP Billiton: US$110/t fob), followed by two quarters of price lifts – in response to seasonal restocking across regional steel industries. Going forward, we have incorporated this seasonality of global steel production rates in the price forecasts: greatest lift in steel production rates globally occurs during H1; with H2's rates relatively weak.

Key risks to iron ore price forecasts

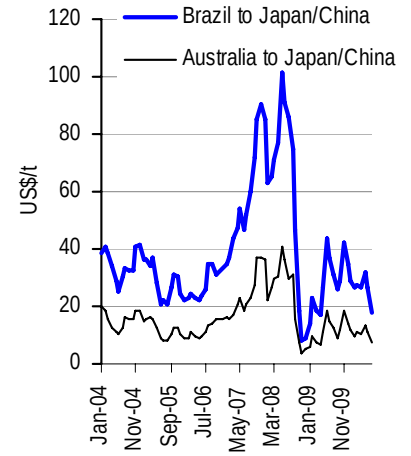
- lift in scale of China's infrastructure (building construction, road, rail, power utilities) programs: BULLISH
- persistent constraint on economic activity by China's central government (lifting bank reserve ratios, restrict credit market liquidity): BEARISH
- surprise lift in China's domestic iron ore production rates (this risk is diminishing): BEARISH
- decline in India's iron ore exports (political pressure is building in India to curtail the trade, or at least to increase export taxes): BEARISH

Chart 45:China's ore imports (Mt/mth)



Source: China Customs, Antaike, Tex Report

Chart 46:Capesize freight rates (US$/t)



Source: CRU, UBS

Global Iron Ore Market

Table 11: Global iron ore market

		2008	2009	2010e	2011e	2012e	2013e	2014e	2015e
Global crude steel production	Mt	1,302	1,199	1,370	1,426	1,489	1,552	1,619	1,689
YoY growth	%	-1.8%	-7.9%	14.3%	4.1%	4.4%	4.3%	4.3%	4.3%
Global iron ore demand	Mt	1,596	1,506	1,740	1,806	1,870	1,902	1,971	2,010
Global iron ore supply	Mt	1,657	1,535	1,694	1,801	1,901	2,041	2,177	2,272
Global Balance	Mt	60.9	29.8	-46.0	-4.7	31.0	138.7	206.0	262.1
Total seaborne iron ore demand	Mt	846	903	1,046	1,084	1,154	1,203	1,285	1,330
YoY growth	%	9.2%	6.7%	15.9%	3.6%	6.4%	4.2%	6.8%	3.5%
China iron ore import requirements	Mt	444	628	655	679	711	725	792	825
China as % of seaborne market	%	52%	70%	63%	63%	62%	60%	62%	62%
Total seaborne iron ore supply	Mt	850	901	1,030	1,081	1,158	1,252	1,383	1,488
YoY growth	%	9.1%	6.0%	14.3%	5.0%	7.1%	8.1%	10.4%	7.6%
Seaborne Balance	Mt	4.3	-2.2	-16.3	-3.0	4.3	49.8	98.2	158.7
Exports									
Australia	Mt	315	384	430	479	521	571	615	663
Brazil	Mt	327	296	366	391	414	452	534	583
India	Mt	101	120	120	90	85	80	80	80
Price JFY fines (JBM)	US$/t	88.3	95.4	202.6	179.3	173.4	151.7	122.9	111.5
Price JFY fines (JBM)	US¢/dltu	144.7	96.9	205.8	182.1	176.2	154.1	124.8	113.3
Price JFY lump (JBM)	US$/t	123.1	111.2	233.6	207.2	200.5	175.4	145.8	142.1
lump/fine differential	US$/t	34.8	15.8	31.0	28.0	27.1	23.7	22.9	30.6
Price change fines JFY	%	80%	8%	112%	-12%	-3%	-13%	-19%	-9%
Price change lump JFY	%	97%	-10%	110%	-11%	-3%	-13%	-17%	-3%
China's Iron Ore Market									
Pig iron production production	Mt	471	541	587	600	614	619	648	658
Domestic iron ore production	Mt	785	875	876	854	803	774	668	588
Implied iron grade of domestic ore	%	24%	16%	16%	16%	16%	16%	16%	17%
Net iron ore imports	Mt	444	628	655	679	711	725	792	825
Estimated grade of imported ore	%	60%	60%	60%	60%	59%	59%	59%	59%
import growth	%	16%	41%	4%	4%	5%	2%	9%	4%
Imported iron units % of total	%	59%	73%	74%	75%	76%	77%	81%	83%
Source of iron ore imports to China									
Australia	%	41%	42%	42%					
Brazil	%	23%	23%	20%					
India	%	21%	17%	21%					

Source: UBS Research

Iron ore supply-side outlook

Biggest contributors to iron ore supply growth are the Big 3, naturally

Vale: 312Mt 2010e; largest expansion to occur 2014-15, taking total to 425Mtpa (30% trade); Rio Tinto: 220Mt 2010e; largest expansion to occur 2013-15, taking total to 275Mtpa (20% trade); BHP Billiton: 140Mt 2010e; largest expansion to occur 2010-13, taking total to 240Mtpa (17% trade); Simandou: biggest standalone project in the world; post-2015; ~100Mtpa (7% trade); FMG: 40Mt 2010e; we have it reaching a maximum of 55Mtpa (4% trade); joint contribution of juniors to global and seaborne supplies is negligibly small.

Metallurgical Coal

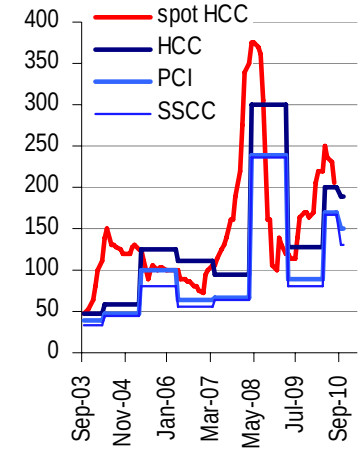
Floor is nigh

Met-coal's price mechanism change in March, featuring more than 80% of the trade being re-priced to a quarterly basis rather than annual benchmark, has lifted the profile of the once-illiquid (<10% of trade) spot hard coking coal price, together with a range of new industry indices. These have all weakened since mid-April by 25% (**HCC now US$186/t fob Aust.**), reflecting the decline in quantity demanded by steel mills & lift in semi-hard/soft demand (response to Q210's +50-110%qoq lift); tonnes being switched from thermal's lower-priced trade, and, more recently – seasonally weaker H2CY global steel production growth rates (*Iron Ore & Coal: quarterly price forecasts*, 13-Apr-10).

What's the short-term (H210) downside to met-coal prices? Following work on production cost data (*Bulks: what's the price downside?* 2-Jul-10), and given the swing-capacity role of US producers in this trade – **we see US$180/t fob as a solid short-term floor for spot**, with quarterlies set closer to US$200/t fob.

An apparent paradox has emerged in trade: hard coking coal's spot price is falling, but producers are reporting limited supply. This actually reflects a fall in spot tractions, such that the reported price is becoming a poor trade indicator. Because steel output rates & coal demand eases in H2CY – met-coal's spot trade shrinks mid-year. This was evident under the rigid benchmark price regime. Despite the change to the price mechanism, this characteristic of trade remains.

Chart 47:Met-coal prices (US$/t fob)



Source: CRU, UBS Research

Supply-demand outlook

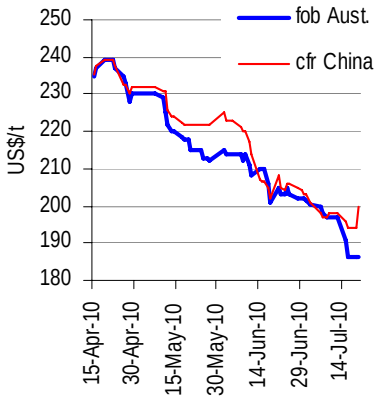
We forecast a modest surplus in the traded metallurgical coal market (includes all hard to semi-soft coking coals; PCI) of 2010, as trade flows fall more than we expected in H2CY; but a tighter market for 2011-12 (deficit 3Mt; 1-2% of forecast demand), after which the market moves closer to balance as supply lifts in response to higher prices.

Met-coal demand is forecast to rise 14% to 257Mt in 2010 (from 09's low), lifting a further 6%yoy in 2011 (China's imports expand further), then 1-2%/year out to 2015, when it totals 283Mt. Key drivers of this outlook include China's net imports (moves from 2% to 15% by 2015, >30Mtpa indefinitely) and India (>10%/year out to 2015 to almost 50Mtpa; offers greatest upside risk to our numbers), while Europe's demand is set to expand at a modest 2% per year over the same period.

Met-coal's total supply is forecast to lift 15% in 2010 to 261Mt. This is dominated by Australia, now delivering c60% of the seaborne total, and expanding by up to 6% per year to 164Mt by 2015 – pushing global supply of trade to 284Mt (+18% or 40Mt extra coal over five years; +3% per year).

Key risks to our supply outlook remains the expansion plans for Mongolia and Mozambique. We cap Mongolia's output at 20Mtpa in our model; already exports 4Mtpa; South Gobi (first 8Mtpa, then 20Mtpa) and others, Mongolia Energy Corporation, Energy Resources; Tethys Mining; et al. Mozambique is capped at 8Mtpa by 2016, but Vale's Moatize, as well as Riversdale's Zambeze-Benga, may deliver more within this forecast period.

Chart 48:HCC price indices (US$/t)



Source: Platts

UBS price forecasts

Since the price mechanism for the met-coal trade was revised in March, two quarterly deals have been reported:

- **Q1JFY10 (Apr-Jun)** US$200/t for HCC; US$170/t fob low vol-PCI; US$167/t fob semi-soft coking coal.
- **Q2JFY10 (Jul-Sep)** US$225/t for HCC; US$180/t fob low vol-PCI; we accept an unconfirmed trader report that semi-soft was settled at US$172/t fob for this quarter (probably by Xstrata, dominant player of this product).

We forecast lower Q3JFY10 (Oct-Dec) prices: US$190/t for HCC; US$150/t fob low vol-PCI; US$130/t fob semi-soft coking coal – in response to seasonal steel demand weakness (Oct weakest month; China holiday), & despite seasonal late-Q4 restocking, ahead of H12011's seasonal lift in global. This event supports our q-o-q lift in Q4JFY11 (Jan-Mar 2011) met-coal prices.

From this point, our met-coal price forecasts remain at these levels until 2012, after which a lift in supply – responding to relatively high prices – eventually weighs on prices. Forecasts then decline to our unchanged long-term prices.

Compared with our previously published prices (13 April 2010), we have only adjusted JFY10's forecast: hard coking coal prices are 4% lower; LV-PCI -3%; semi-soft -6%. We are 1-8% below consensus for HCC & LV-PCI's JFY10-12; 10-14% below consensus beyond this; SSCC JFY10 forecast is 7% below consensus; 1-7% above for JFY11-12.

Risks to met-coal's price forecasts

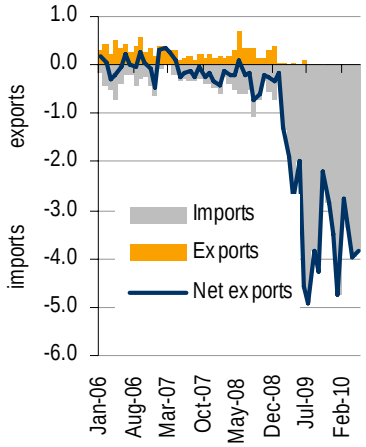
Our met-coal price/supply-demand outlook is exposed to several key risks:

- lift in scale of China's infrastructure (building construction, road, rail, power utilities) programs: BULLISH
- persistent constraint on economic activity by China's central government (lifting bank reserve ratios, restrict credit market liquidity): BEARISH
- China ramps up domestic coal production capacity, undermining demand for coal imports: BEARISH
- met-coal supply expansion from Mongolia & Mozambique is greater than we forecast: BEARISH

Met-coal's Jul-Sep price deals

Seaborne's HCC & PCI Jul-Sep quarterly price deals were done by early June. JFE Steel confirmed reports that BHP Billiton-Mitsubishi Alliance had settled HCC at US$225/tfob (2-June; 12.5%qoq). Then Posco settled a quarterly contract price for LV-PCI with producers Macarthur-Foxleigh at US$180/tfob (10-June; +5.9%qoq). There was no formally reported deal for semi-soft, although Platts reported late-June on a US$172/t fob deal, without confirming sources. All deals were regarded by the market as benchmarks for the Jul-Sep quarter, adhering to the long-standing annual benchmark price culture.

Chart 49:China's Met-coal trade (Mt/mth): holding up well



Source: Barlow Jonker, Tex Report, Bloomberg

Global Metallurgical Coal Market

Table 12: Global metallurgical coal market

		2008	2009	2010e	2011e	2012e	2013e	2014e	2015e
Global crude steel production	Mt	1,303	1,200	1,325	1,402	1,469	1,548	1,626	1,710
growth	%	-1.7%	-7.9%	10.4%	5.8%	4.8%	5.3%	5.0%	5.2%
Total traded met-coal demand	Mt	241	226	257	274	280	281	282	283
YoY growth	%	3.2%	-6.2%	14.0%	6.6%	2.1%	0.3%	0.3%	0.5%
Japan imports	Mt	61	45	52	53	54	53	53	52
YoY growth	%	0.5%	-27.2%	15.3%	2.5%	1.4%	-1.7%	0.2%	-0.8%
Europe net imports	Mt	68	50	53	55	55	55	56	57
YoY growth	%	-0.9%	-26.9%	5.7%	3.6%	0.4%	0.5%	0.9%	2.5%
India imports	Mt	24	28	34	41	45	47	48	48
YoY growth	%	15.2%	15.9%	19.8%	20.0%	10.0%	5.0%	1.0%	1.0%
Brazil net import trend	Mt	17	17	16	18	18	19	19	20
YoY growth	%	14.1%	-2.9%	-0.6%	7.0%	3.0%	3.0%	3.0%	3.0%
China net import trend	Mt	3	34	43	41	39	36	34	32
growth	%	-8%	896%	28%	-6%	-6%	-6%	-6%	-6%
Total traded met-coal supply	Mt	241	226	261	271	277	281	282	284
YoY growth	%	3.1%	-6.2%	15.3%	3.9%	2.3%	1.6%	0.1%	0.7%
Australia exports	Mt	135	135	144	153	156	158	161	164
Canada exports	Mt	27	22	24	25	25	24	25	25
US exports	Mt	39	34	45	45	40	35	30	26
Balance	Mt	0.7	0.7	3.6	-3.4	-3.0	0.6	0.1	0.5
Market's product split: HCC	%	62%	61%	65%	67%	67%	66%	65%	64%
Market's product split: LV-PCI	%	15%	16%	14%	14%	14%	14%	15%	15%
Market's product split: SSCC	%	22%	23%	20%	20%	20%	20%	20%	21%
Hard coking coal price(JBM)	US$/t	300.0	129.0	207.5	205.0	190.0	152.5	135.0	131.3
LV_PCI price(JBM)	US$/t	240.0	90.0	165.0	165.0	150.0	122.5	107.5	102.8
premium HCC vs. PCI	%	25%	43%	26%	24%	27%	24%	26%	28%
Semi-soft coking coal price (JBM)	US$/t	235.0	80.0	151.0	157.5	130.0	110.0	100.0	97.1
premium HCC vs. SSCC	%	28%	61%	37%	30%	46%	39%	35%	35%
China's Metallurgical Coal Market									
Steel Production									
China	Mt	500	565	590	610	630	663	697	733
Global ex-China	Mt	803	635	735	792	839	884	929	977
China's trade									
Imports	Mt	7	34	45	43	41	38	37	35
Exports	Mt	3	1	2	2	2	2	2	2
Net imports	Mt	3	34	43	41	39	36	34	32
Global trade, ex-China									
Supply	Mt	238	192	217	230	238	245	247	251
Demand	Mt	237	192	214	233	241	244	247	251
Balance	Mt	0.7	0.7	3.6	-3.4	-3.0	0.6	0.1	0.5
Net export growth									
China	Mt	-3	-34	-43	-41	-39	-36	-34	-32
Global ex-China	Mt	145	123	141	152	159	164	165	167
YoY growth	%	7%	-15%	15%	7%	5%	3%	1%	1%

Source: UBS Research; HCC = Hard Coking Coal; SSCC = Semi-Soft Coking Coal; PCI = Pulverised Coal Injection

Thermal Coal

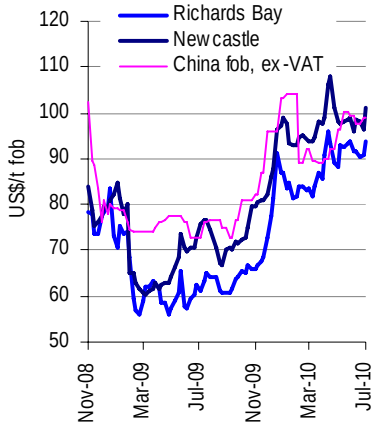
Picture of stability

Of the commodities we cover, thermal coal has proved the most resilient to the market-wide sell down of the last quarter. Newcastle & Richards Bay spot price indices have traded within an extraordinarily tight band year-to-date (generally >US$90/t fob), because the market is benefitting from a multitude of persistent fundamental supports.

These include on-going strong demand growth from India; higher met-coal prices prompting a switch of tonnes out of the thermal trade; South Africa underperforming exports (rail infrastructure; Eskom mismanagement); monsoonal rains and strong demand growth in Indonesia; emerging rail infrastructure issues in Australia (now that port issues are resolved).

Several weeks ago, thermal coal's seaborne trade received yet another price support (or potential driver), when China's *National Development & Reform Commission* (NDRC) announced the imposition of caps on locally-produced coal prices (at Jun-10 levels). When the NDRC capped prices in mid-08, supply fell (local producers shut high-cost output); utilities lifted seaborne imports (seaborne prices & equities lifted) and eventually, electricity-producing capacity was closed (primary objective of NDRC). We are bulls on thermal coal.

Chart 50:Thermal coal prices (fob only)



Source: globalCOAL, Bloomberg

Supply-demand outlook

We have updated our thermal coal model, featuring small changes to our last-published numbers (*Iron Ore & Coal: quarterly price forecasts*, 13-Apr-10). A forecast deficit of up to 2-12Mtpa (<2% of forecast demand) out to 2012 in thermal coal's global markets reflects strong import flows for China and India, and a lift towards normal trading levels by recovering major economies.

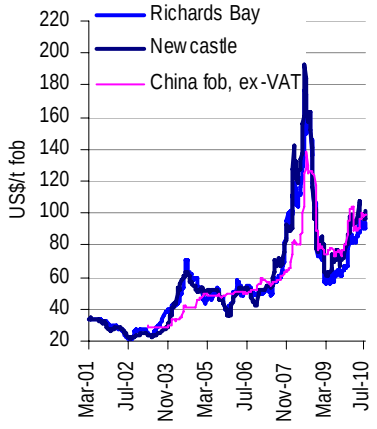
Global thermal coal (traded) demand is forecast to lift 5.3% in 2010 to 704Mt, and 2% per year out to 2015, to top 761Mt. Key drivers of this outlook include China's net imports (+171%yoy in 2009 to 92Mt; >60Mtpa to 2015) and India, increasing at 10%/year out to 2015, to 100Mtpa. Apart from the recovery lift in imports in 2010, growth in Europe and the US is expected to remain subdued over the medium term: 1-3% per year.

Global thermal coal's supply is forecast to lift supply-side is set to expand at 3.2% in 2010, and by 13% over the next five years – dominated by exports from Indonesia and Australia (55% of the seaborne total). Indonesia's wet season may undermine supply by mid-2010, but we nevertheless expect a 2% year-on-year lift in 2010, to 230Mt.

Australia's supply is a steady 5.6% per year out to 2015, to 171Mt: port loading capacity is no longer the constraint on Australia's growth but rail services may be. As we expect seaborne prices to remain high over the medium term (cUS$100/t fob), we have marginally lifted our North American and Colombian supply forecasts.

Note prices are higher not only because China has increased imports but because it has also cut exports: once a +50Mtpa exporter, we see it delivering <15Mtpa over the medium term.

Chart 51: Thermal coal prices - history



Source: globalCOAL, Bloomberg

Price forecast: buoyed by met-coal's tightness

Our thermal coal price forecast is unchanged (*Iron Ore & Coal: quarterly price forecasts*, 13 April 2010), despite modest changes in supply-demand forecasts. We expect a JFY11 annual contract of US$120/t fob, +20%yoy on the existing JFY10 $98/t fob, set by Xstrata with Japan's biggest power utility, Chubu this earlier this year. This forecast is only 2% above consensus.

We also forecast that thermal's contract price will remain above US$100/t fob for JFY11-12, falling below in JFY13 as the supply-side finally responds to these higher prices, and as key infrastructure issues are resolved. These longer-term forecasts are 9-21% above consensus.

Risks to thermal coal's price forecasts

- Indonesia & South Africa redirect exports to domestic markets to supply growing domestic demand: BULLISH
- China ramps up domestic coal production capacity, undermining demand for coal imports: BEARISH
- Colombian/US deliveries into Asia lift at >US$100/t fob prices: BEARISH

Commodity market is strong, but not the equities

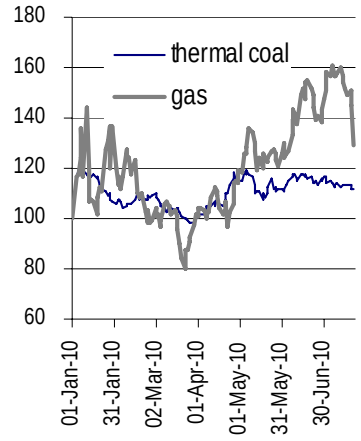
While thermal coal's trade is well supported – with key prices trading in a tight band over many weeks – not all the corresponding equities reflect the fundamentals. US thermal coal equities in particular have been sold down (more than halved, generally), since Q1. Equities that have held up in line with the commodity trade include Banpu, Bukit Asam. Other Asia names were also sold down, with China's coal producers hit recently by the NDRC price caps.

Meanwhile, back in Europe

Key measure of the strength of Europe's thermal coal demand has long-been the Richards Bay fob price, and the API2 (equivalent landed price in Europe). But Richards Bay price is now being supported by India-buying in South Africa, and arbitrage trading by Korea and China, linking the European and Asian trades. As a result, the Richards Bay price has been tracking the Newcastle spot index very closely year-to-date.

Nevertheless, the European trade does still have some impact on the South African price. Trading steadily in the low US$90s, RB faces some downside risk from Europe, given that its market features large, stable inventories, steady trade flows and a mild summer. Resolution of the Richards Bay strike this week may also weigh on the short-term price.

Chart 52: Europe's coal & gas prices



Source: Bloomberg

Global Thermal Coal Market

Table 13: Global thermal coal market

		2008	2009	2010e	2011e	2012e	2013e	2014e	2015e
Global Power Generation	TWhr	19,187	20,064	20,940	21,415	21,891	22,366	22,842	23,317
YoY growth	%	2%	5%	4%	2%	2%	2%	2%	2%
Coal-fired power (major economies)	%	52.6	50.8	50.1	50.7	51.7	51.2	50.8	50.3
Weighted average efficiency	t/MWhr	0.474	0.473	0.474	0.474	0.475	0.475	0.475	0.475
Total traded thermal coal demand	Mt	662	668	704	719	721	734	745	761
YoY growth	%	1.1%	0.8%	5.3%	2.2%	0.3%	1.8%	1.6%	2.1%
Japan imports	Mt	128.1	110.9	121.6	126.4	127.7	129.6	130.9	132.8
EU net imports	Mt	80.6	59.1	44.1	45.8	49.5	53.8	56.6	59.5
US net imports	Mt	12.8	7.4	13.0	10.6	10.0	6.9	4.9	5.3
Total traded thermal coal supply	Mt	662	668	689	716	732	748	763	779
YoY growth	%	1.0%	0.9%	3.2%	3.8%	2.3%	2.2%	2.0%	2.1%
Indonesia exports	Mt	201.1	233.5	230.0	232.3	234.6	237.0	241.7	246.5
Australia exports	Mt	126.0	127.6	135.0	148.5	156.4	163.9	167.2	170.5
South Africa	Mt	65.6	63.6	65.0	68.3	68.6	75.5	79.2	83.2
Colombia	Mt	68.7	63.4	77.0	81.2	84.6	84.6	85.8	87.1
China net exports	Mt	2	-74	-89	-75	-55	-51	-47	-44
Balance	Mt	-0.1	0.1	-14.2	-3.2	10.8	14.2	18.0	18.1
US total utility year-end inventories	Mt	163.06	206.63	185	196	190	193	192	192
Export thermal coal JFY contract price	US$/t	125.0	71.0	98.0	120.0	110.0	100.0	90.0	84.9
Newcastle spot	US$/t	129.5	68.7	97.5	114.5	112.5	102.5	92.5	85.1
Richards Bay spot	US$/t	120.5	62.8	91.7	112.5	110.5	100.5	90.5	81.7
China Thermal Coal Market									
Power Production									
China	TWhr	3,222	3,712	4,201	4,330	4,459	4,588	4,717	4,846
Global ex-China	TWhr	15,965.5	16,352.0	16,738.5	17,084.9	17,431.3	17,777.7	18,124.1	18,470.5
China's trade									
Imports	Mt	34.0	92.1	105.0	90.0	75.0	71.3	67.7	64.3
Exports	Mt	35.8	18.5	16.0	15.0	20.0	20.4	20.5	20.6
Net imports	Mt	-1.8	73.7	89.0	75.0	55.0	50.9	47.2	43.7
Global trade, ex-China									
Supply	Mt	626.4	649.5	673.4	700.7	711.9	727.7	742.8	758.4
Demand	Mt	628.3	575.7	598.6	628.9	646.1	662.6	677.6	696.6
Balance	Mt	-2.0	73.8	74.8	71.8	65.8	65.0	65.2	61.7
Net export growth									
China	Mt	1.8	-73.7	-89.0	-75.0	-55.0	-50.9	-47.2	-43.7
Global ex-China	Mt	419.7	390.2	400.5	435.6	469.2	486.0	501.7	515.2
YoY growth	%	2%	-7%	3%	9%	8%	4%	3%	3%

Source: UBS Research

Gold

Extension of the fear trade

The primary driver of gold's direction in Q2 2010 was safe haven demand. While we acknowledge this angle has moderated in July, we believe the spotlight will return to focus on sovereign debt burdens in Europe and beyond. The fear of further debasement of fiat currencies follows closely. And in turn we expect the fear trade - very apparent through heightened physical demand for small bars and coins and rising ETF creations - will escalate in H2 2010 and into 2011.

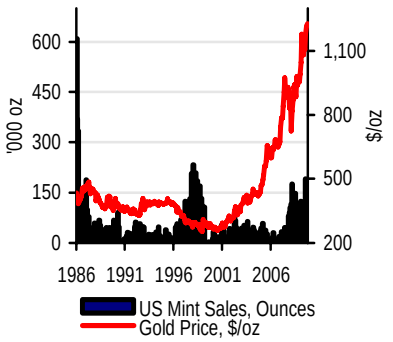
While this will remain the most significant factor driving short term direction, this factor has longer term consequences. Julien Garran, our mining and metals analyst, labels gold a "call option" on debt monetisation. Long term fiscal imbalances pose an inflation risk when markets begin to price in a move or return to quantitative easing. This risk has not only prompted existing investors to increase their exposure to gold but new investors have also emerged. And in an inflationary reality, combating this problem through higher interest rates is difficult as rising interest rates only adds to the existing debt burden. History provides a plethora of evidence.

A recent paper by the BIS - *The future of public debt: prospects and implications*, Cechetti et al (2010) – references countries that historically ran high public debt eventually ended up with high inflation, largely because governments were unwilling to pay higher interest rates. The paper cites examples of Belgium, Spain and Italy who resorted to debt monetisation during the inter-war period. This reality would be very positive for gold. Rising inflation is tempting as it inflates away the debt burden of nations by reducing the real value of debt. Rising inflation may also arise due to the public's unwillingness to hold government bonds. In such a scenario, a central bank would have little choice but to purchase government bonds. In the BIS *80th Annual Report*, June (2010), the Bank concedes that such a scenario is unlikely in the short term, but they acknowledge that "failure by government to make headway in restoring fiscal sustainability increases the risk that inflation expectations may abruptly and unexpectedly change".

The dreaded 'D'

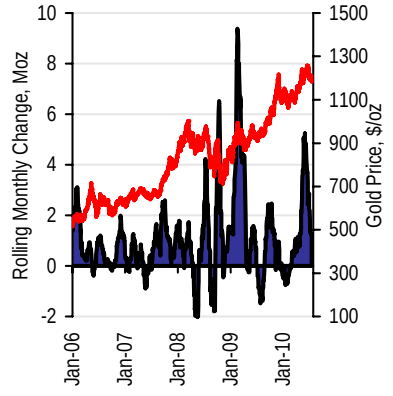
In recent meetings with clients, very often deflation concerns have been raised and gold's direction in such an environment. Yes, we admit the risk of deflation is high. UBS' economist Andrew Cates and Larry Hathaway recently assessed global deflation risks with reference to Japan. They acknowledge that both the US and Europe currently display some parallels to Japan. Unit wage cost inflation is very low in the US and Europe while excess capacity in labour markets remains heightened. Furthermore, M3 measures of the money supply continue to fall in the US and Eurozone compared to last year. Plus, our economists note that monetary conditions might not be as easy as commonly believed. Real short term interest rates have been above the pace of real GD growth in the OECD for several quarters. The key determining variable will be policy response.

Chart 53: US Mint one ounce coin sales



Source: US Mint, UBS

Chart 54: Gold held in 12 ETFs



Source: ETF provider data, UBS

But based on the UBS base case scenario, US and European deflation ought to be avoided. Our economists expect a global recovery to continue, even if that recovery is liable to be modest and sub-par. And importantly, policy makers are very aware of deflation risk and the damage that it can bring. Central banks would retain very easy monetary policy stances for considerably longer, possibly via further unorthodox measures, in the event of heightened concerns.

Focus on fundamentals

Very often fundamentals play a limited role in determining gold's journey, particularly in the last quarter. But over the past 18 months or so a numbers of these variables have altered direction.

Our expectations both for higher prices and higher volatility suggest that the jewellery sector will continue to behave in the manner set in 2009 and which persisted in H1 '10. We expect jewellery consumption will dwarf investor demand for the remainder of 2010 and into 2011. However, gold's brief jaunt sub $1200 in July has revealed this sector - particularly India - is quite willing to provide an important price floor.

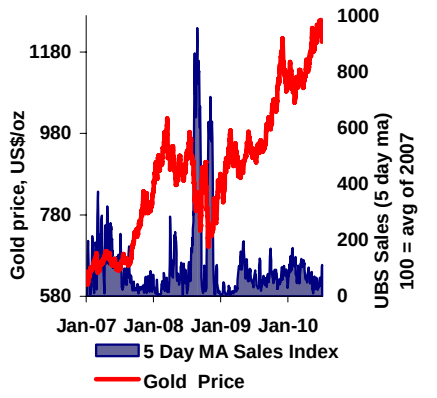
While 'auspicious' buying occasions are rather absent between now and the beginning of Q4, jewellery fabricators will need to re-stock inventory in advance of a number of notable events such as:

- Diwali – November 5
- Hindu wedding session starts mid November, first auspicious day November 18
- Eid al-Adha – Muslim festival running from Nov 6-9
- Christmas and Lunar New Year (February 3)
- Valentines Day

The other side of physical demand is scrap supply. The first six months of 2010 have, on occasion, resembled Q1 2009 when scrap flows were very visible. With our expectation for higher prices in H2 and into 2011 we expect scrap supply to accelerate, replicating the 2009 pattern and sometimes having sufficient momentum to dampen rallies. $1250 has been an important price point, as will $1300.

2010 will be a significant year for official sector gold activity. While this supply source sold just 41 tonnes net last year, we expect central banks will move from the supply side of the gold fundamental equation to the demand side in 2010. We do not believe that the recent disclosure of BIS gold swap transactions will have any impact on official sector sales. Whilst the IMF continues to sell through the CBGA3, additional sales through the agreement are close to zero. Based on current available information, the official sector is very much on track to become net consumers of gold this year. But in aggregate, we do not expect official sector sales will be voluminous this year; nonetheless this factor provides a very supportive element to the market over the medium term.

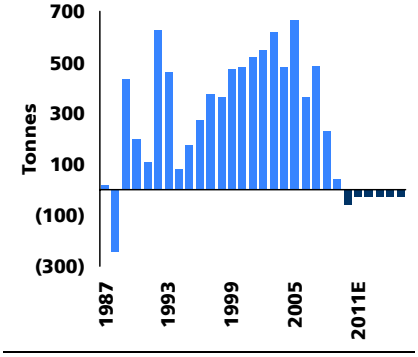
Chart 55: Index of UBS sales to India



Source: UBS

In recent months, we have been regularly asked if European Central Banks will mobilise their gold holdings in order to reduce their fiscal imbalances. To answer this question, we first highlight that European Central Banks are bounded by the 400 tonne annual selling ceiling of the CBGA3. Secondly, the reasoning behind central banks holding gold include diversification, economic and physical security and confidence amongst others – as such now is exactly the time when central banks should maintain their gold holdings. And thirdly, it is very difficult for a central bank to align any gold liquidation with the desire of their citizens to increase their holdings as sovereign risk and fiat currency debasement concerns escalate.

Chart 42: Central Bank gold sales



Source: WGC, GFMS, UBS

Heightened safe haven investor flow is quite obvious when we take a reading of ETF creations and US Mint coin demand so far this year. We estimate 2010 ETF demand will repeat last year's impressive gains. And after a slow start to the year, US Mint coin demand has overtaken demand from the equivalent 2009 period. Comex positioning will likely remain quite volatile, though we expect the overall bias towards a rising net long position will prevail.

A new trend in 2010 is the movement towards fully allocated physical gold. In H2 and 2011, we expect this type of gold exposure will deepen as new and existing investors diversify a portion of their gold reserves to purely allocated form. Quite simply, such customers are limiting their weight of paper gold exposure. In essence, this is diversification within diversification.

Downside warnings

We identify three primary downside risks to gold. Firstly, the metal could be caught in the cross fire of another extreme de-risking event. Gold has certainly fallen victim to margin calls in the past, but such episodes have proven to be shallow as investors perceive such occasions as buying opportunities. They also afford the physical market the chance to participate at lower prices. Secondly, should scrap supplies monopolise other investor demand such as ETFs, this has the ability to cause short term price reversals. And thirdly, as the market has experienced in July, as the clouds surrounding fiscal burdens clear to a degree, gold's safe haven requirements decline. However, we believe such occurrences will have little longevity. The BIS forecasts that the aggregate public debt of advanced economies is projected to rise from 76% in 2007 to 100% in 2011.

From a currency perspective, UBS sees further downside EURUSD direction ahead with a year-end forecast of $1.15 and $1.10 for 2011. A stronger dollar typically translates into a weaker gold price, but since late May this relationship has moved into positive territory. We believe these two safe haven assets will continue to move in line.

UBS price forecast

We are upgrading our gold price forecasts across all time horizons. We estimate that gold will average $1205 in 2010, from $1129 previously. For 2011, we raise our forecast from $1250 to $1295. Prices for 2012 – 2014 have been raised 7-10%. We also raise both our long-term nominal and real gold price, by 13% each to $1060 and $934 respectively.

Table 14: Gold Supply-Demand Balance

Tonnes	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Supply								
Mine Production	2409	2572	2521	2603	2594	2572	2538	2506
% change	-2.8%	6.8%	-2.0%	3.3%	-0.3%	-0.8%	-1.3%	-1.3%
Net Official Sales	232	41	-58	-28	-28	-28	-28	-28
Scrap	1326	1674	1550	1361	1100	1100	1100	1100
Hedging	-352	-254	-50	-50	0	0	0	0
TOTAL SUPPLY	3615	4033	3963	3886	3666	3644	3610	3578
% change	4.0%	11.6%	-1.7%	-1.9%	-5.7%	-0.6%	-0.9%	-0.9%
Demand								
Fabrication (including scrap)								
Jewellery	2193	1759	1671	1587	1667	1750	1925	2118
Electronics	293	246	256	266	277	288	299	311
Other	214	229	195	191	197	195	178	175
Official Coin Sales	187	229	321	353	282	226	203	183
Total Fabrication	2850	2447	2469	2434	2457	2511	2685	2878
% change	-7.3%	-14.1%	0.9%	-1.4%	1.0%	2.2%	6.9%	7.2%
Identified Bar Hoarding	384	187	224	269	215	215	215	215
Net ETF purchases	318	605	550	450	400	300	300	300
TOTAL DEMAND	3552	3239	3244	3153	3073	3026	3200	3393
% change	-0.1%	-8.8%	0.1%	-2.8%	-2.5%	-1.5%	5.7%	6.1%
Balance (implied investment)	63	794	719	733	593	618	410	185

Source: GFMS 2008-2009, UBS estimates

Silver

'Poor Mans Gold' Potential

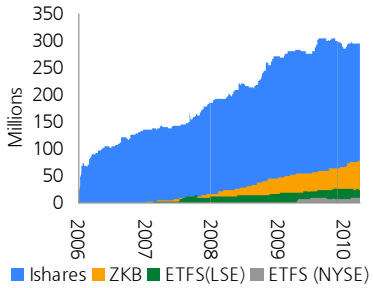
With our expectation that gold will continue to perform strongly in 2010, we are also positive towards silver. Like platinum and palladium, silver is exposed to the possible headwinds of a risk averse environment but we see potential for silver to gain in the role as 'poor mans gold' or the cheaper alternative to the primary safe haven asset.

Provided demand for safe haven assets remains heightened, silver stands to benefit. This factor, rather than the metals supply and demand backdrop, should act as silver's primary price determinant.

Investment flows to dominate price direction

Investment flows will remain the driving force of the silver price and the metal is certainly not immune to intense bouts of deleveraging. Compared to the other precious metals, the silver ETF platform has underperformed this year. Currently, holdings stand at 407 moz globally but this investor platform has risen just 4.7% this year. This compares with a 16.6% rise for gold. It is puzzling why silver was the forgotten ETF trade in H1. One plausible reason rests with the view that platinum and palladium presented more upside following the launch of their US ETFs. It is true that the gold ETF performed much like silver in the first four months, but from May gold's ETF creations have been substantial. Silver, perhaps shackled by its industrial metal status, lacked sufficient impetus to attract new investors. Also, in the short term, ETF appetite may have reached saturation point.

Chart 56: Silver ETF Holdings: 2006 - 2010



Source: ETFS, ZKB, iShares, UBS

And while investment and speculative flows will remain silver's largest driver, within this factor it is changes in Comex positioning that will have greater impact on the silver price rather than ETF changes. Going forward, we argue that if silver can behave more like a precious metal in H2 and benefit as the cheaper alternative to gold, the white metal should move above $20.

Silver investment requires a bold disclaimer. It regularly takes investors and speculators hostage given its innate tendency to outperform gold to the upside but it can spectacularly beat gold in the race to the downside. This factor quite often acts as a natural deterrent for some investors.

UBS price forecast

Our 2010 silver forecast sits at $18.32, from $17.74 previously. Our 2011 estimate remains unchanged at $19.50. We have raised our 2012 – 2014 prices by 3-8% while our long-term nominal and real price forecasts are now 5-6% higher at $15.04 and $13.25 respectively.

Table 2: Silver Supply-Demand Balance

Moz	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Supply								
Mine Production	684.7	709.6	720.2	741.9	764.1	787.0	810.6	835.0
% change	3.1%	3.6%	1.5%	3.0%	3.0%	3.0%	3.0%	3.0%
Net Official Sector Sales	27.6	13.7	10.0	10.0	10.0	10.0	10.0	10.0
Old Silver Scrap	176.6	165.7	159.1	152.7	146.6	140.7	135.1	129.7
Producer Hedging	-11.6	-22.3	-12.0	-10.0	-10.0	0.0	0.0	0.0
Total Supply	877.3	866.7	877.3	894.6	910.7	937.8	955.7	974.7
% change	1.4%	-1.2%	1.2%	2.0%	1.8%	3.0%	1.9%	2.0%
Demand								
Industrial Applications	443.4	352.2	376.9	400.5	424.5	450.0	477.0	505.6
Photography	104.8	82.9	74.6	67.1	60.4	54.4	49.0	44.1
Jewellery	158.3	156.6	172.3	180.9	177.3	168.4	165.0	161.7
Silverware	56.9	59.5	65.5	72.0	75.6	77.1	78.6	80.2
Coins and Medals	65.2	78.7	94.4	103.9	106.0	108.1	110.2	112.4
Total Demand	828.6	729.9	783.7	824.4	843.8	858.0	879.9	904.1
% change	1.4%	-11.9%	7.4%	5.2%	2.4%	1.7%	2.6%	2.8%
Balance (implied investment)	48.7	136.8	93.6	70.2	66.9	79.8	75.9	70.6

Source: GFMS 2008-2009, UBS estimates

Platinum

Fundamentally aligned

2010 has been a rollercoaster ride for both platinum and palladium. Both metals experienced acute reversal in price direction in late May. As regular readers of our Precious Metals Daily will recall, we became increasingly cautious (but not bearish) for PGMs, in particular platinum, in late April. As the extent of Europe's sovereign debt burden became more apparent in May, we worried that fiscal tightening and austerity measures could have negative consequence for European auto sales and in turn platinum demand. Palladium is more insulated as while the US is its largest consuming nation, Europe and China are also very significant demand regions. How has our assessment of platinum changed since then? Following the recent price pullback, we believe platinum and palladium are now trading much closer to their fundamental values than any other period this year.

European concerns

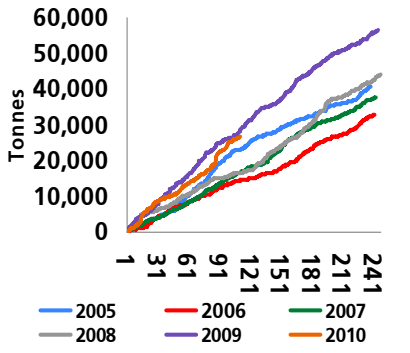
UBS auto analysts expect European auto demand to fall 9% in 2010. This forecast is slightly more positive than earlier estimates due to stronger than expected sales performance year-to-date and more optimistic views on the balance of 2010 in Europe as a result of continued low interest rates helping the recovery in light commercial vehicles in particular. Western European sales are forecasted at 13.54m units this year. But looking at sales forecasts out to 2015; Western European sales are estimated to rise by just 7% in five years. From platinum's perspective, this represents challenging demand conditions up ahead. Also, we have concerns that Europe may revisit the trends that were quite apparent last year. In an effort to economise, consumers in greater numbers turned to gasoline autos rather than the more expensive diesel variety, and in consequence hurting platinum demand and boosting palladium requirements. Sales of smaller cars also rose.

China stabiliser

But platinum is cushioned by other demand avenues, in particular jewellery. Chinese jewellery demand was the compensating factor in the platinum market last year, largely replacing lost demand from a struggling auto sector. Initially, we did not believe this pattern would be repeated in 2010 given the higher platinum price compared to 2009 and the absence of the re-stocking that was quite apparent last year. The first four months of the year conformed to this expectation. But since late May, a significantly lower platinum price has prompted a substantial rebound in Chinese jewellery demand. We measure this through Swiss exports to China and Hong Kong, and also through official Chinese imports. Platinum turnover on the Shanghai Gold Exchange acts as a more real-time proxy of this change. Currently year-to-date turnover is just 10% below the same period of 2009.

Going forward, and much like last year, Chinese jewellery demand will once again act as an important demand stabiliser, and will become even more significant if auto demand does not stack up to the expectations that abounded earlier in the year, particularly in Europe.

Chart 57: SGE Platinum Turnover – progressive days



Source: SGE, UBS

The widening of Chinese retail jewellery outlets to peripheral Chinese cities ensures an element of restocking is also in the system. This factor provides us with some comfort that pure fundamental demand should help to provide a price floor around $1500. We anticipate global jewellery demand will fall just over 10% short of 2009 record levels.

Never short South Africa

The threats to South African supply continue to bubble under the surface, threatening to erupt at any time. Those threats, ranging from the risk of electricity load shedding, safety issues, the increased tendency for strike action amongst unions alongside the kick-off of the wage negotiations with some of the producers all present a risk to platinum supply. On the other hand, additional supply this year will arrive from an increase in auto catalyst recovery.

ETF stickiness

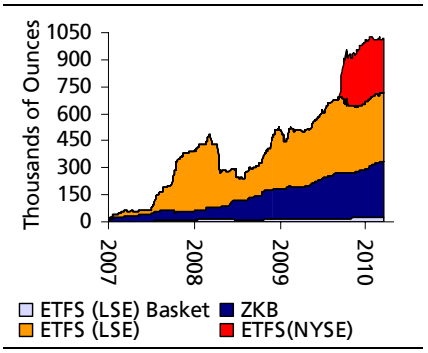
The introduction of the US based platinum and palladium ETF contracts has opened these markets up to new investors and whilst simultaneously allowing existing investors to deepen their exposure to PGMs. In the absence of much liquidation action since May's price reversal, indicators to date suggest these investors operate with a buy and hold mentality. But while holdings have remained relatively stable, we are not anticipating the return of the frenzied buying that characterised Q1. Rather, we anticipate significantly more muted activity in H2. By year end, we forecast that global platinum holdings will sit at 1.07 moz – just 50 koz higher from current positioning. The lack of ETF creations does not concern us; rather we consider it more important that current investors retain their sticky attitude.

From an exchange perspective, current investor and speculative positioning is greatly reduced by some 616 koz from the April 13 high of 1417.5 koz; therefore we have fewer concerns that such positioning represents an overhang to the market. While platinum will not be fully insulated in the event of a return of an extreme de-risking scenario, less speculative length helps to stem some fears that the metal platinum is acutely vulnerable in another round of fire-selling across multiple asset classes.

UBS price forecast

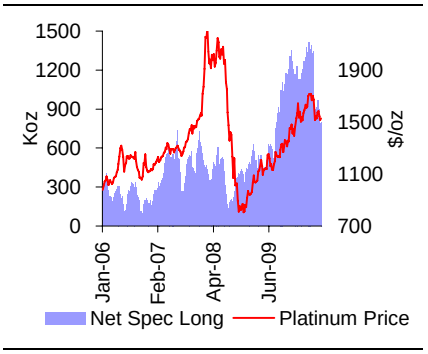
Given our caution over auto sales in Europe, but confident that Chinese jewellery demand can support and also accounting for current prices, we lower our 2010 platinum forecast marginally to $1600, from $1625 previously. We also estimate a 77 koz surplus this year. Our 2011 forecast now sits at $1700, an increase of $43. 2013 and 2014 estimated prices remain unchanged, while we have revised our long-term nominal and real price by 7% to $2069 and $1823.

Chart 58: Global Platinum ETF Holdings



Source: ETFS, ZKB, UBS

Chart 59: Platinum Nymex COTR



Source: CFTC, Bloomberg, UBS

Table 15: Platinum Supply-Demand Balance

000oz	2008	2009	2010E	2011E	2012E	2013E	20114E	2015E
Supply								
South Africa	4515	4530	4790	5006	5113	5455	5688	5962
North America	325	260	303	317	323	333	337	340
Russia	805	785	839	824	824	865	906	824
Others	295	345	379	406	423	456	509	563
Total Supply	5940	5920	6310	6553	6683	7109	7440	7689
Supply growth	-10.0%	-0.3%	6.6%	3.8%	2.0%	6.4%	4.6%	3.3%
Demand								
Autocatalyst (gross)	3655	2230	2981	3631	3880	4068	4278	4402
Autocatalyst recycling	1130	830	1026	1055	1137	1224	1286	1329
Autocatalyst (net)	2525	1400	1955	2576	2742	2844	2992	3074
Chemical	400	295	325	341	349	358	367	376
Electrical	230	190	205	215	220	224	229	233
Glass	315	10	210	231	243	255	267	281
Investment	555	660	710	550	550	550	550	550
Jewellery (incl recycling)	1360	2435	2133	2028	2035	2250	2370	2496
Petroleum	240	205	221	230	239	244	249	254
Other	535	440	475	485	494	504	514	525
Total Demand	6160	5635	6234	6656	6873	7229	7539	7788
Demand Growth	-7.4%	-8.5%	10.6%	6.8%	3.3%	5.2%	4.3%	3.3%
Balance	-220	285	77	-104	-189	-120	-99	-99

Source: Johnson Matthey 2008-2009, UBS estimates

Palladium

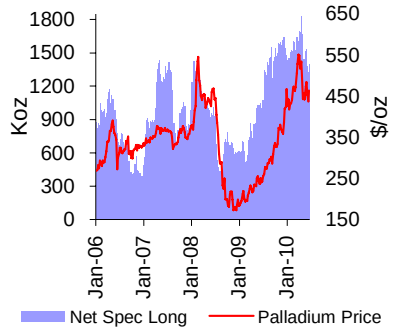
Positioning less frothy

We are more enthusiastic for palladium over platinum for the remainder of this year and are forecasting a 74 koz palladium deficit for 2010. Stacking platinum and palladium auto demand up, where auto sales are rising, this applies by and large to gasoline regions. We believe it's quite possible that the European market could re-visit some of the trends that were evident in 2009 – namely an increasing movement towards cheaper gasoline vehicles and further substitution of platinum for palladium in diesel catalysts.

It's fair to say that palladium was by far the most consensus trade in the precious metals space – perhaps even in commodities - in the first 5 months of 2010. The success of the US ETF launch in January prompted additional interest in the PGMs in general. And while some of this interest was grounded in fundamentals with the expectation of an auto industry that needed to re-stock following 2009's de-stocking event, another portion of the interest was purely speculative.

As de-risking turned to extreme levels, the record size of investor / speculative positioning - at 1.83 moz Nymex net longs in mid May – quickly became an overhang. Current Nymex net positioning is more than 500 koz lighter from the peak. We believe that palladium is currently trading more in line with its fundamental value and now that a great deal of the excess speculative froth has been erased, palladium should be less exposed in the event of another risk-off environment.

Chart 60: Palladium Nymex COTR

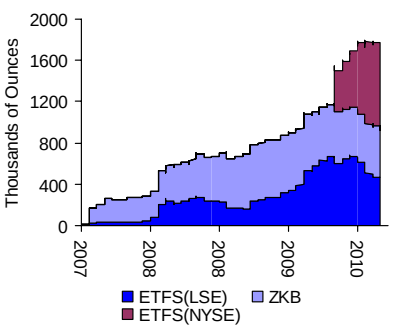


Source: CFTC, Bloomberg, UBS

ETF stability

The stability of ETF positioning provides support to our current view. Global ETF holdings stand at 1.70 moz - just 76 koz below the record high from May 25. Initially, as de-risking took hold, we become quite concerned that the 580 koz year to date increase in global palladium ETF holdings could morph into a steep liquidation wave – particularly as most of these positions were under water and no precedent existed of the trading action of the newly arrived US ETF investor during price reversals. This has not materialised. The US ETF investor has largely revealed a buy and hold attitude, thus mirroring the attitude seen in gold and silver.

Chart 61: Global Palladium ETF Holdings



Source: ETFS , ZKB, UBS

Oh Russia

While we believe palladium tells a better demand story over platinum, platinum presents more of a short term supply side threat through the persistent issues facing South Africa production. For palladium, we expect primary mine supply to be relatively stable but the extent of Russian state stockpiles is the unknown factor in the mix which could have long term implications. This view is supported by comments from Norilsk Nickel, Johnson Matthey and others. Also, the recent movement of palladium from Russia into the Zurich clearing system confirm this supply source is considerably quieter than previous years. While this cannot be taken as a confirmation of limited Russian activity going forward, it adds weight to the thinking that Russian stockpiles are limited.

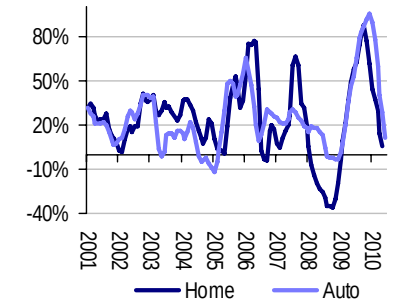
Risks up ahead

We believe that current investor positioning is more aligned with actual supply and demand mechanics. But we highlight a number a potential risk signposts up ahead. Being an industrial metal, palladium (and platinum) is closely correlated with the level of risk appetite across markets. This represents one of the greatest downside threats for both metals.

While auto sales and production are in general more robust than 2009, this market faces many threats, particularly if the risk of a double dip recession grows. Uncertainty over end consumer demand may deter industrial users, in particular automakers, from building inventories and indeed encourage users to maintain inventories at minimal levels.

The early 2010 enthusiasm for a global auto recovery is attracting some doubt. Some of palladium's key markets may soften. UBS recently revised its US auto sales outlook to 11.7m from 12.3m for 2010 and to 13m from 14m for 2011. This reflects the trio forces of disappointing year to date retail sales, slower than expected improvement in financing availability and a potentially more cautious consumer due to recent equity market performances. However the US sales recovery remains on track and we continue to believe that sales will rebound in the second half of 2010, but at a slower than anticipated pace.

Chart 62: China YoY house sales versus auto sales



Source: CEIC, UBS, Haver

Decelerating in China presents a threat to the regions auto sales. In the last three months, the slowdown in real estate has been closely correlated with a dampening in auto sales. UBS maintains that so long as the housing market remains weak, contagion will follow through into weaker auto sales. Worries about inventory build-up and overcapacity are rising. But rather than a hard landing, we estimate auto sales will lose their frenzied monthly double digit quarterly growth increases, and instead post a more modest growth level into 2011. In June, y-o-y auto sales rose 14.4%, marking the lowest rate since January. It's quite possible that y-o-y could turn negative up ahead, particularly as Q3 is traditionally a quieter season for auto sales. For now, the luxury end of the market shows limited signs of slowing down; often growing faster than the overall market, this is positive for palladium in terms of ladings. From a PGM perspective, the slowdown in Chinese auto demand will be compensated by a movement towards more stringent legislation.

UBS price forecasts

We forecast that palladium will average $470 in 2010, 1% higher from our previous forecast. On balance we believe that current investor positioning is more in line with the metal's fundamentals than any other time this year, but we refrain from raising our forecasts due to the uncertain outlook for risky assets in general and the potential for industrial users to follow a frugal inventory path. Our 2011 forecast rises to $525, $35 higher from before. We raise our 2012 forecast 9% to $525. Our long term-term forecasts are essentially unchanged.

Table 16: Palladium Supply-Demand Balance

000oz	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Supply								
South Africa	2,430	2,370	2,699	2,819	2,898	3,224	3,364	3,510
North America	910	755	822	861	922	1,029	1,019	1,009
Others	310	340	344	377	410	450	470	480
Russian Sales	3,660	3,635	3,615	3,240	3,140	3,236	3,368	3,272
Total Supply	7310	7100	7481	7297	7370	7939	8221	8271
Supply Growth	14.8%	-2.9%	5.4%	-2.5%	1.0%	7.7%	3.6%	0.6%
Demand								
Autocatalyst (gross)	4,420	4,130	4,746	5,017	5,446	5,764	6,048	6,262
Recycling	1,170	930	1,202	1,243	1,289	1,208	1,166	1,194
Autocatalyst (net)	3250	3200	3543	3774	4157	4555	4882	5068
Chemical	350	325	358	375	385	394	404	414
Electrical	1325	1270	1397	1467	1504	1541	1580	1619
Dental	630	615	646	678	712	748	785	824
Jewellery	855	815	835	856	878	900	922	945
Investment	400	625	700	500	450	450	450	450
Other	80	70	76	77	79	80	82	83
Total demand	6890	6920	7555	7727	8164	8668	9105	9404
Demand Growth	0.8%	0.4%	9.2%	2.3%	5.6%	6.2%	5.0%	3.3%
Balance	420	180	-74	-430	-793	-730	-884	-1134

Source: Johnson Matthey 2008-2009, UBS estimates

Appendix

Cash costs of production: base metals

Chart 63: Copper (Q12010 data)

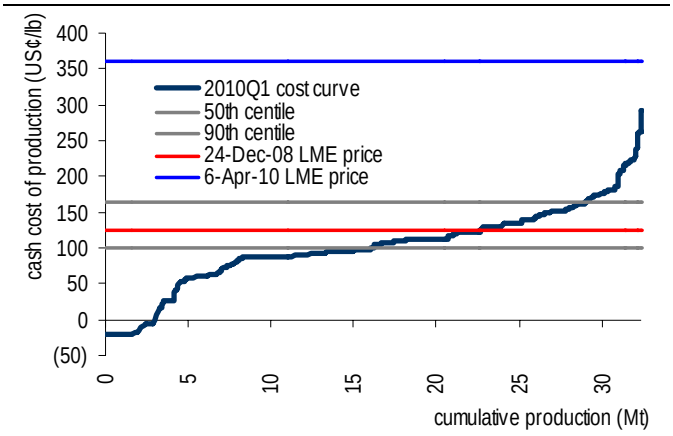


Chart 64: Aluminium (Q12010 data)

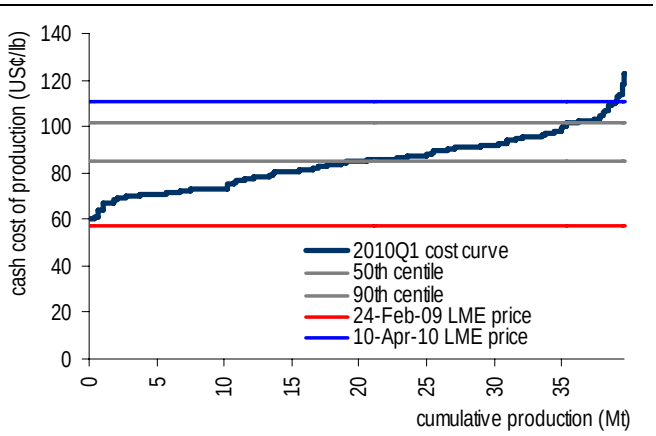


Chart 65: Nickel (Q12010 data)

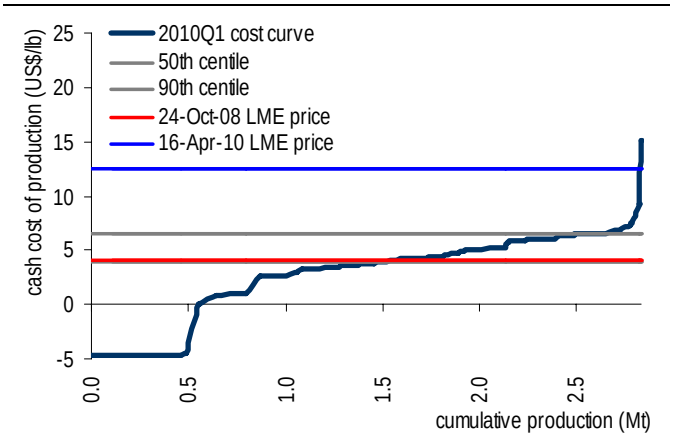


Chart 66: Zinc (Q12010 data)

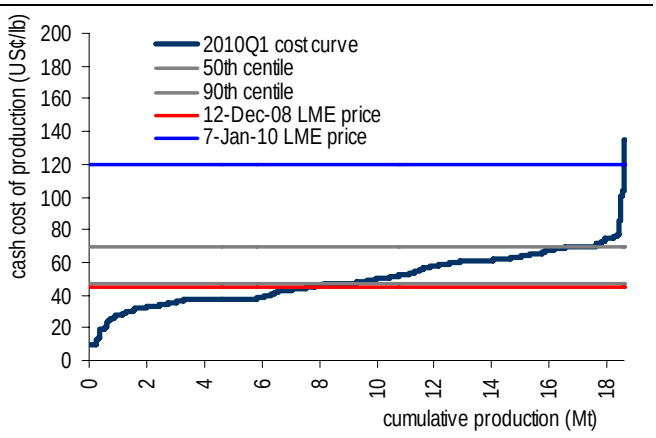
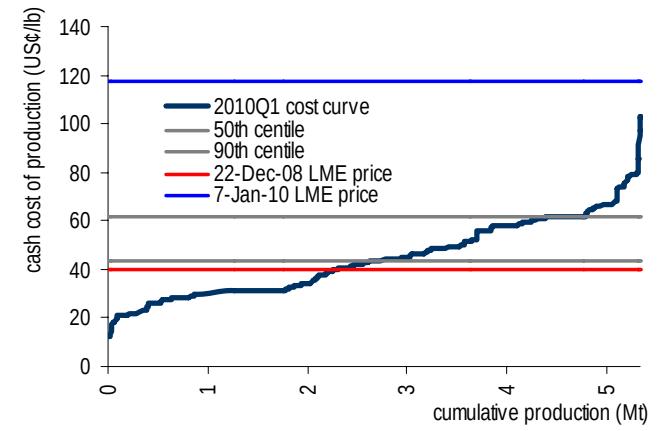


Chart 67: Lead (Q12010 data)



Source: UBS Research, Bloomberg, industry contacts

Cash costs of production: bulks

Chart 68: Iron ore, by operation (Q12010 data)

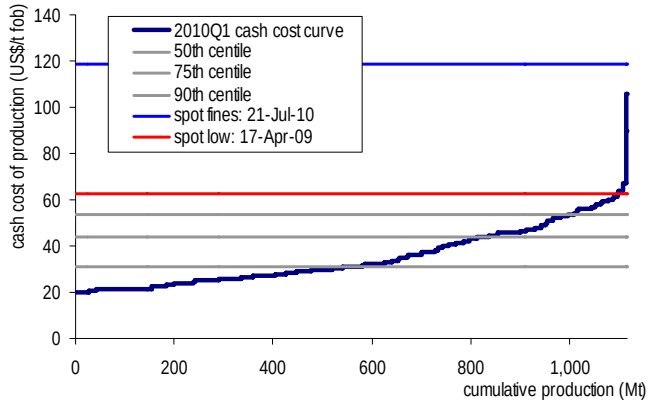


Chart 69: Iron ore, by company (Q12010 data)

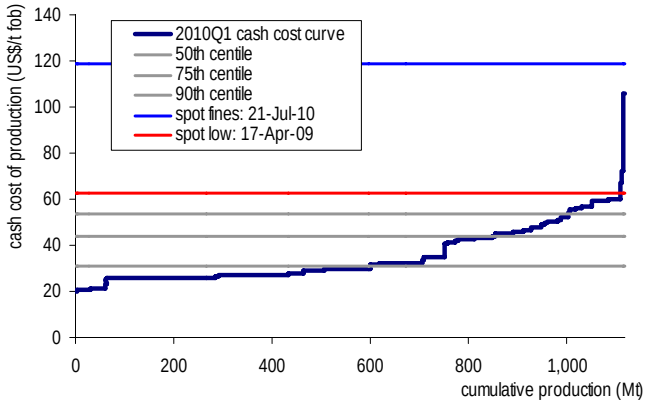


Chart 70: Metallurgical coal (2009 data; composite curve)

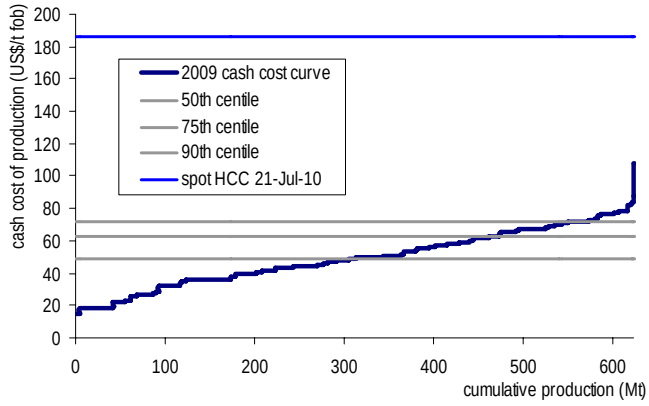
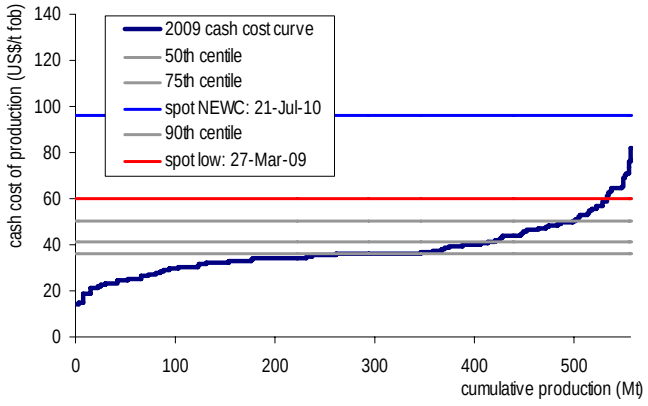


Chart 71: Thermal coal (2009 data)



Source: Metalytics, AME, UBS Research, industry contacts

UBS Commodity Price Forecasts

Table 17: UBS Commodity Price Forecasts (as at 20-July-10)

Metals, Oil	units	2009	1Q10	2Q10	3Q10	4Q10	2010E	1H10	2H10	2011E	2012E	2013E	2014E	2015E	LT real
Aluminium	US$/lb	0.76	0.98	0.95	0.91	0.93	0.94	0.97	0.92	1.04	1.10	1.15	1.20	1.25	1.10
Copper	US$/lb	2.34	3.29	3.18	3.05	3.15	3.17	3.24	3.10	3.45	3.30	2.70	2.30	2.27	2.00
Lead	US$/lb	0.78	1.00	0.88	0.85	0.90	0.91	0.94	0.88	1.00	1.00	0.85	0.65	0.51	0.45
Nickel	US$/lb	6.65	9.15	10.16	8.80	8.90	9.25	9.65	8.85	9.30	9.40	9.20	9.10	9.08	8.00
Zinc	US$/lb	0.75	1.04	0.92	0.85	0.90	0.93	0.98	0.88	1.04	1.10	0.98	0.85	0.85	0.75
Cobalt	US$/lb	17.4	21.7	21.7	20.0	20.0	20.9	21.7	20.0	18.0	16.0	16.0	16.0	15.9	14.0
Molybdenum	US$/lb	11.4	15.8	16.7	16.0	18.0	16.6	16.3	17.0	20.0	21.5	19.5	14.5	13.6	12.0
Manganese ore	US$/dry tonne	5.47	7.10	8.11	8.11	8.11	7.86	7.61	8.11	7.28	6.18	5.35	4.80	4.54	4.00
Uranium	US$/lb	46.7	42.3	41.1	42.0	45.0	42.6	41.7	43.5	47.5	55.0	60.0	65.0	68.1	60.0
Crude oil (WTI)	US$/bbl	61.7	78.8	77.7	74.0	77.0	76.9	78.3	75.5	80.0	80.0	80.2	82.3	84.3	74.3
Precious Metals															
Gold	US$/oz	974	1,111	1,198	1,250	1,260	1,205	1,154	1,255	1,295	1,175	1,100	1,075	1,060	934
Palladium	US$/oz	266	444	495	470	470	470	469	470	525	525	569	703	643	567
Platinum	US$/oz	1,211	1,569	1,631	1,575	1,625	1,600	1,600	1,600	1,700	1,833	1,917	1,980	2,069	1,823
Rhodium	US$/oz	1,598	2,567	2,691	2,390	2,413	2,515	2,629	2,401	2,825	4,600	7,016	7,786	4,823	4,250
Silver	US$/oz	14.7	16.9	18.3	18.5	19.5	18.3	17.6	19.0	19.5	16.0	16.0	15.5	15.0	13.3
A$/US$		0.792	0.905	0.882	0.870	0.870	0.882	0.893	0.870	0.870	0.870	0.800	0.800	0.800	0.800
Bulk Commodities		JFY09					JFY10E			JFY11E	JFY12E	JFY13E	JFY14E	JFY14E	LT real
Iron Ore - lump (Pilbara)	US$/mtu fob	1.1299	1.1299	2.2146	2.7129	2.0347	2.2975	1.6722	2.3738	2.1902	2.1197	1.8338	1.5234	1.4435	1.26
	US$/t fob	70.6	70.6	138.4	169.5	127.2	143.6	104.5	148.4	136.9	132.5	114.6	95.2	90.2	79.0
	%chg yoy						103.3%			-4.7%	-3.2%	-13.5%	-16.9%	-5.2%	-12.4%
Iron Ore - fines (Pilbara)	US$/mtu fob	0.9541	0.9541	1.8934	2.3194	1.7323	1.9605	1.4237	2.0258	1.8647	1.8047	1.5613	1.2646	1.1150	0.98
	US$/t fob	60.6	60.6	120.2	147.3	110.0	124.5	90.4	128.6	118.4	114.6	99.1	80.3	70.8	62.0
	%chg yoy						105.5%			-4.9%	-3.2%	-13.5%	-19.0%	-11.8%	-12.4%
Hard Coking Coal	US$/t fob	129.0	129.0	200.0	225.0	190.0	203.8	164.5	207.5	205.0	190.0	152.5	135.0	131.3	115.0
	%chg yoy						58%			1%	-7%	-20%	-11%	-3%	-12%
Low Volatile PCI	US$/t fob	90.0	90.0	170.0	180.0	150.0	165.0	130.0	165.0	165.0	150.0	122.5	107.5	102.8	90.0
	%chg yoy						83%			0%	-9%	-18%	-12%	-4%	-12%
Semi Soft	US$/t fob	80.0	80.0	167.0	172.0	130.0	154.8	123.5	151.0	157.5	130.0	110.0	100.0	97.1	85.0
	%chg yoy						93%			2%	-17%	-15%	-9%	-3%	-12%
Thermal Coal	US$/t fob	71.0	71.0	98.0	98.0	98.0	98.0	84.5	98.0	120.0	110.0	100.0	90.0	84.9	75.0
	%chg yoy						38%			22%	-8%	-9%	-10%	-6%	-12%

Source: UBS Research

■ Statement of Risk

We point out to investors the potential risks inherent in the mining sector including, but not limited to, the volatile nature of commodity prices and currencies, which may differ materially from expectations. Furthermore the sector is exposed to political, financial and operational risks, each of which has the potential to significantly impact company/industry performance

■ Analyst Certification

Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers; and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

Required Disclosures

This report has been prepared by UBS Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

For information on the ways in which UBS manages conflicts and maintains independence of its research product; historical performance information; and certain additional disclosures concerning UBS research recommendations, please visit www.ubs.com/disclosures. The figures contained in performance charts refer to the past; past performance is not a reliable indicator of future results. Additional information will be made available upon request.

UBS Investment Research: Global Equity Rating Allocations

UBS 12-Month Rating	Rating Category	Coverage[1]	IB Services[2]
Buy	**Buy**	54%	41%
Neutral	**Hold/Neutral**	37%	32%
Sell	**Sell**	9%	24%
UBS Short-Term Rating	**Rating Category**	**Coverage[3]**	**IB Services[4]**
Buy	**Buy**	less than 1%	22%
Sell	**Sell**	less than 1%	0%

1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
3:Percentage of companies under coverage globally within the Short-Term rating category.
4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS. Rating allocations are as of 30 June 2010.

UBS Investment Research: Global Equity Rating Definitions

UBS 12-Month Rating	Definition
Buy	FSR is > 6% above the MRA.
Neutral	FSR is between -6% and 6% of the MRA.
Sell	FSR is > 6% below the MRA.
UBS Short-Term Rating	**Definition**
Buy	Buy: Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.
Sell	Sell: Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.

KEY DEFINITIONS

Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.

Market Return Assumption (MRA) is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium).

Under Review (UR) Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.

Short-Term Ratings reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case.

Equity Price Targets have an investment horizon of 12 months.

EXCEPTIONS AND SPECIAL CASES

UK and European Investment Fund ratings and definitions are: Buy: Positive on factors such as structure, management, performance record, discount; Neutral: Neutral on factors such as structure, management, performance record, discount; Sell: Negative on factors such as structure, management, performance record, discount.

Core Banding Exceptions (CBE): Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Company Disclosures table in the relevant research piece.

Research analysts contributing to this report who are employed by any non-US affiliate of UBS Securities LLC are not registered/qualified as research analysts with the NASD and NYSE and therefore are not subject to the restrictions contained in the NASD and NYSE rules on communications with a subject company, public appearances, and trading securities held by a research analyst account. The name of each affiliate and analyst employed by that affiliate contributing to this report, if any, follows.

UBS Limited: Julien Garran; Edel Tully. **UBS Securities Australia Ltd:** Tom Price.

Company Disclosures

Company Name	Reuters	12-mo rating	Short-term rating	Price	Price date
Acerinox[16]	ACX.MC	Sell	N/A	€13.09	21 Jul 2010
Adaro Energy[2a]	ADRO.JK	Buy	N/A	Rp2,025	22 Jul 2010
Allegheny Technologies Inc.[16]	ATI.N	Buy	N/A	US$47.30	21 Jul 2010
Alumina Limited[4a, 16]	AWC.AX	Buy	N/A	A$1.51	22 Jul 2010
Barrick Gold Corporation[2a, 2b, 4a, 4b, 5b, 6, 16, 20]	ABX.N	Buy (CBE)	N/A	US$41.73	21 Jul 2010
BHP Billiton Plc[4a, 5b, 16]	BLT.L	Buy	N/A	1,919p	21 Jul 2010
CONSOL Energy, Inc.[2a, 4a, 5b, 6, 16]	CNX.N	Buy	N/A	US$37.67	21 Jul 2010
Johnson Matthey[16]	JMAT.L	Sell	N/A	1,636p	21 Jul 2010
Kumba Iron Ore[16, 22]	KIOJ.J	Neutral	N/A	RCnt36,250	21 Jul 2010
Newcrest Mining Limited[2a, 4a, 5a, 5b, 13, 16]	NCM.AX	Buy	N/A	A$32.92	22 Jul 2010
Nippon Steel[4a, 16]	5401.T	Neutral	N/A	¥287	22 Jul 2010
Rio Tinto Plc[4a, 16, 22]	RIO.L	Buy	N/A	3,248p	21 Jul 2010
Riversdale Mining Limited[1a, 5a, 5b, 13]	RIV.AX	Buy	N/A	A$10.10	22 Jul 2010
Steel Dynamics Inc.[16, 20]	STLD.O	Buy (CBE)	N/A	US$14.11	21 Jul 2010
Sterlite Industries[1b, 5b, 16, 20]	STRL.BO	Buy (CBE)	N/A	Rs176.00	22 Jul 2010
Teck Resources Ltd.[5c, 16, 20]	TCKb.TO	Buy (CBE)	N/A	C$35.14	21 Jul 2010
Umicore[5b]	UMI.BR	Sell	N/A	€25.40	21 Jul 2010

Source: UBS. All prices as of local market close.
Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

1a. UBS AG, Australia Branch is acting as Sole Underwriter, Sole Bookrunner and Joint Lead Manager to Riversdale Mining Limited on the Entitlement Offer and Placement and will be receiving a fee for acting in this capacity.

1b. UBS Securities (India) Pvt. Ltd. is acting as manager/co-manager, underwriter, placement or sales agent in regard to an offering of securities of this company/entity or one of its affiliates.

2a. UBS AG, its affiliates or subsidiaries has acted as manager/co-manager in the underwriting or placement of securities of this company/entity or one of its affiliates within the past 12 months.

2b. UBS Securities Canada Inc or an affiliate has acted as manager/co-manager, underwriter or placement agent in regard to an offering of securities for this company/entity or one of its affiliates within the past 12 months.

4a. Within the past 12 months, UBS AG, its affiliates or subsidiaries has received compensation for investment banking services from this company/entity.

4b. Within the past 12 months, UBS Securities Canada Inc or an affiliate has received compensation for investment banking services from this company/entity.

5a. UBS AG, Australia Branch or an affiliate expect to receive or intend to seek compensation for investment banking services from this company/entity within the next three months.

5b. UBS AG, its affiliates or subsidiaries expect to receive or intend to seek compensation for investment banking services from this company/entity within the next three months.

5c. UBS Securities Canada Inc or an affiliate expect to receive or intend to seek compensation for investment banking services from this company/entity within the next three months.

6. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and investment banking services are being, or have been, provided.

13. UBS AG, its affiliates or subsidiaries beneficially owned 1% or more of a class of this company`s common equity securities as of last month`s end (or the prior month`s end if this report is dated less than 10 days after the most recent month`s end).

16. UBS Securities LLC makes a market in the securities and/or ADRs of this company.

20. Because UBS believes this security presents significantly higher-than-normal risk, its rating is deemed Buy if the FSR exceeds the MRA by 10% (compared with 6% under the normal rating system).

22. UBS AG, its affiliates or subsidiaries held other significant financial interests in this company/entity as of last month`s end (or the prior month`s end if this report is dated less than 10 working days after the most recent month`s end).

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report.

For a complete set of disclosure statements associated with the companies discussed in this report, including information on valuation and risk, please contact UBS Securities LLC, 1285 Avenue of Americas, New York, NY 10019, USA, Attention: Publishing Administration.

Global Disclaimer

This report has been prepared by UBS Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS. In certain countries, UBS AG is referred to as UBS SA.

This report is for distribution only under such circumstances as may be permitted by applicable law. Nothing in this report constitutes a representation that any investment strategy or recommendation contained herein is suitable or appropriate to a recipient's individual circumstances or otherwise constitutes a personal recommendation. It is published solely for information purposes, it does not constitute an advertisement and is not to be construed as a solicitation or an offer to buy or sell any securities or related financial instruments in any jurisdiction. No representation or warranty, either express or implied, is provided in relation to the accuracy, completeness or reliability of the information contained herein, except with respect to information concerning UBS AG, its subsidiaries and affiliates, nor is it intended to be a complete statement or summary of the securities, markets or developments referred to in the report. UBS does not undertake that investors will obtain profits, nor will it share with investors any investment profits nor accept any liability for any investment losses. Investments involve risks and investors should exercise prudence in making their investment decisions. The report should not be regarded by recipients as a substitute for the exercise of their own judgement. Any opinions expressed in this report are subject to change without notice and may differ or be contrary to opinions expressed by other business areas or groups of UBS as a result of using different assumptions and criteria. Research will initiate, update and cease coverage solely at the discretion of UBS Investment Bank Research Management. The analysis contained herein is based on numerous assumptions. Different assumptions could result in materially different results. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information. UBS is under no obligation to update or keep current the information contained herein. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this report is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues, however, compensation may relate to the revenues of UBS Investment Bank as a whole, of which investment banking, sales and trading are a part.

The securities described herein may not be eligible for sale in all jurisdictions or to certain categories of investors. Options, derivative products and futures are not suitable for all investors, and trading in these instruments is considered risky. Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates and other market conditions. Past performance is not necessarily indicative of future results. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument mentioned in this report. For investment advice, trade execution or other enquiries, clients should contact their local sales representative. Neither UBS nor any of its affiliates, nor any of UBS' or any of its affiliates, directors, employees or agents accepts any liability for any loss or damage arising out of the use of all or any part of this report. For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC and/or UBS Capital Markets LP) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms in the UK) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this research report. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein.

Any prices stated in this report are for information purposes only and do not represent valuations for individual securities or other instruments. There is no representation that any transaction can or could have been effected at those prices and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions, by UBS or any other source, may yield substantially different results.

United Kingdom and the rest of Europe: Except as otherwise specified herein, this material is communicated by UBS Limited, a subsidiary of UBS AG, to persons who are eligible counterparties or professional clients and is only available to such persons. The information contained herein does not apply to, and should not be relied upon by, retail clients. UBS Limited is authorised and regulated by the Financial Services Authority (FSA). UBS research complies with all the FSA requirements and laws concerning disclosures and these are indicated on the research where applicable. **France:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities France SA. UBS Securities France S.A. is regulated by the Autorité des Marchés Financiers (AMF). Where an analyst of UBS Securities France S.A. has contributed to this report, the report is also deemed to have been prepared by UBS Securities France S.A. **Germany:** Prepared by UBS Limited and distributed by UBS Limited and UBS Deutschland AG. UBS Deutschland AG is regulated by the Bundesanstalt fur Finanzdienstleistungsaufsicht (BaFin). **Spain:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities España SV, SA. UBS Securities España SV, SA is regulated by the Comisión Nacional del Mercado de Valores (CNMV). **Turkey:** Prepared by UBS Menkul Degerler AS on behalf of and distributed by UBS Limited. **Russia:** Prepared and distributed by UBS Securities CJSC. **Switzerland:** Distributed by UBS AG to persons who are institutional investors only. **Italy:** Prepared by UBS Limited and distributed by UBS Limited and UBS Italia Sim S.p.A.. UBS Italia Sim S.p.A. is regulated by the Bank of Italy and by the Commissione Nazionale per le Società e la Borsa (CONSOB). Where an analyst of UBS Italia Sim S.p.A. has contributed to this report, the report is also deemed to have been prepared by UBS Italia Sim S.p.A.. **South Africa:** UBS South Africa (Pty) Limited (Registration No. 1995/011140/07) is a member of the JSE Limited, the South African Futures Exchange and the Bond Exchange of South Africa. UBS South Africa (Pty) Limited is an authorised Financial Services Provider. Details of its postal and physical address and a list of its directors are available on request or may be accessed at http:www.ubs.co.za. **United States:** Distributed to US persons by either UBS Securities LLC or by UBS Financial Services Inc., subsidiaries of UBS AG; or by a group, subsidiary or affiliate of UBS AG that is not registered as a US broker-dealer (a **'non-US affiliate'**), to major US institutional investors only. UBS Securities LLC or UBS Financial Services Inc. accepts responsibility for the content of a report prepared by another non-US affiliate when distributed to US persons by UBS Securities LLC or UBS Financial Services Inc. All transactions by a US person in the securities mentioned in this report must be effected through UBS Securities LLC or UBS Financial Services Inc., and not through a non-US affiliate. **Canada:** Distributed by UBS Securities Canada Inc., a subsidiary of UBS AG and a member of the principal Canadian stock exchanges & CIPF. A statement of its financial condition and a list of its directors and senior officers will be provided upon request. **Hong Kong:** Distributed by UBS Securities Asia Limited. **Singapore:** Distributed by UBS Securities Pte. Ltd or UBS AG, Singapore Branch. **Japan:** Distributed by UBS Securities Japan Ltd to institutional investors only. Where this report has been prepared by UBS Securities Japan Ltd, UBS Securities Japan Ltd is the author, publisher and distributor of the report. **Australia:** Distributed by UBS AG (Holder of Australian Financial Services License No. 231087) and UBS Securities Australia Ltd (Holder of Australian Financial Services License No. 231098) only to 'Wholesale' clients as defined by s761G of the Corporations Act 2001. **New Zealand:** Distributed by UBS New Zealand Ltd. An investment adviser and investment broker disclosure statement is available on request and free of charge by writing to PO Box 45, Auckland, NZ. **Dubai:** The research prepared and distributed by UBS AG Dubai Branch, is intended for Professional Clients only and is not for further distribution within the United Arab Emirates.

The disclosures contained in research reports produced by UBS Limited shall be governed by and construed in accordance with English law.