Equity Research
Global

Industry

Metals & Mining: Global Insights

Global Metals & Mining

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GICS SECTOR	MATERIALS
NORTH AMERICA	
Strategist Weight	3.2%
S&P 500 Weight	3.2%
EUROPE	
Strategists' Recommended Weight	7.3%
MSCI European Benchmark Weight	6.3%

KEY GLOBAL STOCK PICKS BY COMMODITY

	(Price, Target, Rating)
Iron Ore	
Cleveland Cliffs (CLF.N)	US$74.1, US90, OW
BHP Billiton (BLT.L/BHP.AX)	BLT.L/BHP.AX, 707p/A$18.26, OW
Coking Coal	
Xstrata (XTA.L)	995p, 1150p, OW
Yanzhou Coal (1171.HK)	HK$10.95, HK$13.50, OW
Copper	
Phelps Dodge (PD.N)	US$100, US$123, OW
Zinc	
Vedanta (VED.L)	458p, 590p, OW
Nickel	
Inco (N.N)	US$39.9, US$45, OW

Sector Overview

April 6, 2005

Global Supply/Demand Outlook Through 2008

- **Key take-away: commodities to remain higher for longer**
  We have updated our commodity price forecasts through to 2008. Ongoing Chinese consumption strength is leading to sustained deficits in a number of key commodities. Near term, we are most bullish on zinc, uranium, iron ore and coking coal.
- **Shorter-term investors nervous, but we expect correction to be short-lived**
  The most recent round of Fed tightening saw a bout of nervous speculative selling in commodities as 'carry trade' positions were unwound. Mining and steel company share prices may retrace in the short term; however, due to robust fundamentals, we see this as a sound re-entry point into selected names.
- **Zinc remains a compelling story**
  Zinc has been a laggard, and we expect prices to play catch-up in 2005-6. Zinc should therefore emerge as the only commodity likely to be higher in 2006 than 2005.
- **Steelmaking raw materials to remain stretched**
  We see expanding Chinese steel production in 2005 leading to sustained tightness in iron ore and coking coal markets and now look for the high prices of 2005 to be held through 2006.
- **Steel — regional variances to remain in focus**
  We forecast regional supply/demand variances for steel over the next two years to give rise to pricing differentials between Asia, Europe and the US. Over time, we expect these differentials to be closed out through import/export activity.
- **Our industry views are outlined on page 2**
  We have downgraded our industry view for European Steel from In-Line to Cautious.

Please see analyst certification and other important disclosures starting on page 57.

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Our Global Industry Views

Region	Industry	View	Rationale
Australia	Non-Ferrous	Attractive	We are entering a period of peak commodity pricing because of ongoing US dollar weakness and robust longer-term prospects for China. We see valuations as attractive.
US	Non-Ferrous	Attractive	We believe the industry has additional upside potential due to our outlook for strong commodity pricing on a secular basis.
US	Steel	In-Line	This is based on our assessment that the most recent positive industry developments are largely reflected in the valuations of healthy steel companies.
US	Coal	In-Line	We like the secular case for coal, but we believe the positive story and current outlook are partly reflected in most coal shares. We expect the group to perform in line with the broader market, as share values now adequately reflect 2005 consensus estimates.
Europe	Metals & Mining	In-Line	The European metals and mining industry is trading within 10% of its past two peak-cycle forward P/E multiples. We look for the mining stocks to be market performers over the next 12 months.
Europe	Steel	Cautious	The sector offers 1% potential downside. Arcelor remains our top pick, offering the best balance between leverage to the steel cycle & low financial vulnerability.
Japan	Steel	Attractive	Domestic thin coil supply/demand is improving, the outlook for long-term contract prices is strong, and high-end steel sheet demand in the rest of Asia should continue to expand over the medium term.
Japan	Non-Ferrous	In-Line	Electronic materials seem strong, and the operating environment for smelting is improving.
China	Steel	In-Line	While flat-rolled producers would benefit from a strong price trend, long product producers would suffer from a fixed asset slowdown and sluggish prices.

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Global Supply/Demand Outlook Through 2008

Metals prices to remain higher for longer

In this, our first commodity review for 2005, we have updated our commodity price forecasts through to 2008. The key takeaway is that ongoing Chinese consumption strength is leading to sustained deficits in a number of key commodities. The commodities we are most bullish on near term are zinc, uranium, iron ore and coking coal.

Shorter-term 'fast money' is nervous, but we expect correction to be short-lived. The most recent round of Fed tightening saw a bout of nervous speculative selling in commodities as 'carry trade' positions were unwound. Rising rates increase the cost of holding commodity positions and typically create concerns about the sustainability of growth. That said, we see the fundamental supply-demand position for most commodities as being tighter now than six months ago.

Consumption rates have stepped up. With Chinese industrial production growth running at a heady 17-18% clip during January-February of this year, it looks like commodity consumption growth has shifted up a gear. We are assuming trend growth in commodity consumption in China of around 10% two years out, which could still prove to be conservative.

Steelmaking raw materials to remain stretched. We see expanding Chinese steel production in 2005 leading to sustained tightness in iron ore and coking coal markets and now expect the high prices of 2005 to be held through 2006. We've lifted our assumed 2006 hard coking coal prices by 32% and iron ore by 18%.

Predicated on higher raw material costs, we have lowered our European Steel industry view to Cautious, and see 1% downside potential for the industry. For further details, please refer to our European Steel team's note entitled *Margins Squeeze Forecast, Downgrade to Cautious*, also published today.

We expect uranium oxide prices to continue to move higher. We forecast consumption growth in uranium to increase at a very modest 1% pa. However, we expect the supply of uranium to be in a substantial deficit for a decade. For the past 15 years, only half the global uranium demand for nuclear power generation has been met from mine production, with the balance coming from inventories and depleted weapons grade material. Uranium inventories are almost exhausted, and mine production has not been increased.

Zinc remains a compelling story. Hidden stocks have now been sharply reduced, and as we expect the zinc market to be in deficit of 390kt, 2005 should be year of sharply reducing LME inventories. Zinc has been a laggard, and we expect prices to play catch-up in 2005-6, making zinc the only commodity likely to be higher in 2006 than 2005

Exhibit 1

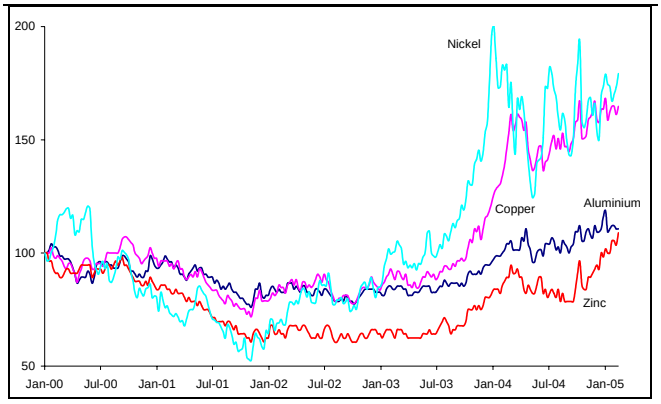
Revised Chinese Demand Growth Estimates (2005–06)

	2005		2006	
	Old	New	Old	New
Copper				
Demand Growth (%)	8	11	6	10
as % of World Demand	23	22	23	24
Nickel				
Demand Growth (%)	13	10	20	13
as % of World Demand	12	12	14	13
Aluminium				
Demand Growth (%)	11	14	10	10
as % of World Demand	23	22	23	23
Iron Ore				
Demand Growth (%)	18	22	10	10
as % of World Demand	38	37	40	39
Steel				
Demand Growth (%)	8	9	6	7
as % of World Demand	33	29	34	30

Source: Morgan Stanley Research estimates

Exhibit 2

Zinc Has Been a Laggard Versus Other LME Metals



Nominal US$ prices rebased. *Source: Datastream*

We expect the copper market deficit to continue for at least another 12 months. While concentrate production has expanded, the combination of smelter bottlenecks and upside surprise on the strength of Chinese consumption now leads us to think that the copper market will remain in deficit until 2H06. Furthermore, if Chinese consumption continues to grow at above trend levels, the market could stay in deficit until mid-2007. We've raised our copper price forecasts for 2005 and 2006 by 8%.

Key global stock picks

We outline below our key actionable global stock picks based on the work contained in this report. We have only selected commodities where we are bullish and stocks that we rate Overweight.

Exhibit 3

Key Global Stock Picks

Commodity	Equity Plays
Iron Ore	Cleveland Cliffs, BHP Billiton
Coal	Xstrata, Yanzhou Coal, Alpha Coal
Copper	Phelps Dodge
Zinc	Vedanta
Nickel	Inco

Source: Morgan Stanley Research

Exhibit 4

Commodity Prices, 2004-07e

Year Ending December		Spot	2004	% Chg YoY	2005e	% Chg YoY	2006e	% Chg YoY	2007e	% Chg YoY	Mid cycle (or LT)	% Chg LT v Spot
Currencies												
USD:AUD	US$	0.79	0.74	13	0.77	5	0.74	-4	0.72	-4	0.68	-14
Rand:USD	US$	6.07	6.49	14	6.26	4	6.95	-11	8.40	-21	9.00	-48
USD:EUR	US$	1.32	1.22	-8	1.15	6	1.22	-6	1.15	6	1.10	17
Base metals												
Aluminium	US$/lb	0.92	0.77	20	0.85	9	0.80	-5	0.75	-7	0.70	-24
Copper	US$/lb	1.52	1.29	60	1.40	9	1.25	-11	1.10	-11	1.00	-34
Zinc	US$/lb	0.64	0.48	25	0.68	42	0.70	4	0.57	-19	0.47	-27
Lead	US$/lb	0.45	0.40	70	0.44	10	0.37	-17	0.28	-23	0.21	-54
Nickel	US$/lb	7.39	6.32	45	7.00	11	6.50	-7	5.25	-19	3.50	-53
Precious Metals												
Gold	US$/oz	443	410	13	429	5	400	-7	400	0	400	-10
Silver	US$/oz	7.40	6.68	34	6.50	-3	6.00	-8	5.50	-8	5.00	-32
Platinum	US$/oz	883	846	25	860	2	781	-9	680	-13	600	-32
Palladium	US$/oz	202	233	16	211	-9	245	16	250	2	270	34
Bulks & Energy												
Alumina	US$/t	284	205	18	232	13	223	-4	209	-6	201	-29
Iron Ore-Fines	US$/t	38.85	22.66	19	38.85	72	38.85	0	25.26	-35	20.53	-47
Iron Ore-Lump	US$/t	49.60	28.92	19	49.60	72	49.60	0	32.24	-35	26.01	-48
Coking Coal	US$/t	125.00	59.26	28	125.00	111	125.00	0	100.00	-20	65.00	-48
Steam Coal (Globalcoal, Ncst'le)	US$/t	48.95	40.00	41	53.00	33	46.00	-13	42.00	-9	36.00	-26
Oil (WTI)	US$/bbl	54.85	41.39	34	42.69	3	42.75	0	36.00	-16	35.00	-36

Source: Morgan Stanley Research estimates

Exhibit 5

Change in Metal Price Estimates, 2005-08e

	Aluminium			Nickel			Copper			Zinc			Platinum		
	Old	New	Chg	Old	New	Chg	Old	New	Chg	Old	New	Chg	Old	New	Chg
Period	US$/lb	US$/lb	%	US$/lb	US$/lb	%	US$/lb	US$/lb	%	US$/lb	US$/lb	%	US$/lb	US$/lb	%
1Q-05	0.83	**0.86**	4	7.20	**6.98**	-3	1.40	**1.44**	3	0.62	**0.62**	0	840	**865**	3
2Q-05	0.82	**0.86**	5	7.00	**7.15**	2	1.28	**1.50**	17	0.66	**0.66**	0	820	**875**	7
3Q-05	0.82	**0.84**	2	7.00	**7.10**	1	1.24	**1.35**	9	0.70	**0.70**	0	810	**860**	6
4Q-05	0.81	**0.82**	1	6.80	**6.77**	0	1.22	**1.30**	7	0.72	**0.72**	0	780	**840**	8
1Q-06	0.77	**0.82**	6	6.00	**6.75**	13	1.15	**1.30**	13	0.72	**0.72**	0	760	**820**	8
2Q-06	0.77	**0.80**	4	6.00	**6.50**	8	1.15	**1.26**	10	0.70	**0.70**	0	740	**790**	7
3Q-06	0.77	**0.80**	4	6.00	**6.50**	8	1.15	**1.22**	6	0.70	**0.70**	0	720	**770**	7
4Q-06	0.77	**0.79**	3	6.00	**6.25**	4	1.15	**1.20**	4	0.68	**0.68**	0	700	**745**	6
2005	0.82	**0.85**	3	7.00	**7.00**	0	1.29	**1.40**	8	0.68	**0.68**	0	813	**860**	6
2006	0.77	**0.80**	4	6.00	**6.50**	8	1.15	**1.25**	8	0.70	**0.70**	0	730	**781**	7
2007	0.74	**0.75**	1	4.50	**5.25**	17	1.05	**1.10**	5	0.57	**0.57**	0	650	**680**	5
2008e, Mid-cycle	**0.70**	**0.70**	**0**	**3.50**	**3.50**	**0**	**1.00**	**1.00**	**0**	**0.47**	**0.47**	**0**	**600**	**600**	**0**

Source: Morgan Stanley Research estimates

Exhibit 6

Change in Bulks Price Estimates, 2005-08e

	Iron Ore (Lump)			Hard Coking Coal			Thermal Coal			Alumina		
	Old	New	Chg	Old	New	Chg	Old	New	Chg	Old	New	Chg
Period	US$/t	US$/t	%	US$/t	US$/t	%	US$/t	US$/t	%	US$/t	US$/t	%
2006e	42.16	**49.60**	18	95.00	**125.00**	32	46.00	**46.00**	0	215	**223**	4
2007e	37.95	**32.24**	-15	85.00	**100.00**	18	42.00	**42.00**	0	206	**209**	2
2008, Mid-cycle	**26.01**	**26.01**	**0**	**55.00**	**65.00**	**18**	**36.00**	**36.00**	**0**	**201**	**201**	**0**

Source: Morgan Stanley Research estimates

Exhibit 7

Currency Forecast Changes, 2005-08e

	USD/AUD			Rand/USD			USD/EUR		
	Old	New	Chg	Old	New	Chg	Old	New	Chg
Period	US$	US$	%	Rand	Rand	%	US$	US$	%
2005e	0.76	**0.77**	2	6.44	**6.26**	-3	1.31	**1.15**	-13
2006e	0.73	**0.74**	2	7.50	**6.95**	-7	1.22	**1.22**	0
2007e	0.70	**0.72**	2	8.40	**8.40**	0	1.15	**1.15**	0
2008, Mid-cycle	**0.68**	**0.68**	**0**	**9.00**	**9.00**	**0**	**1.15**	**1.15**	**0**

Source: Morgan Stanley Research estimates

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Steel — China Drives Demand, But Picture Less Bright beyond 2005

EU demand slows and inventories are high, pricing looks vulnerable

The steel industry has recently enjoyed the best operating environment in more than 20 years. Global demand surged by more than 10% last year, well above the 50-year trend growth of just 2%, thanks to booming demand from China. Industry operating rates have increased to 90%, from just 80% in 2001 and pricing has more than doubled in that period. Industry profits jumped from near breakeven levels in 2001 to 20% ROEs in 2004.

However, the picture looks less bright for 2005. Customers are destocking high steel inventories built last year and, for example, EU15 shipments dropped 5% YoY in the first two months of the year and 11% in February. These trends may continue for several months if demand growth reverts to trend. However, producers are finding it difficult to adjust production fast enough, still up 1% in the period. This overproduction has likely led to a sharp build-up in producer inventories in 1Q05. Similar trends have been seen in other global markets: shipments in the US are down 5% in the first two months of the year while production is up 1%. In China, shipments are up 18% and production 28% in the same comparable period.

Major European steel producers have announced 2Q price increases of €10-15/t needed to offset the sharper than budgeted raw material cost increases. We believe these will fail and forecast that pricing will fall in 2H05 and through 2006. Strong demand and limited supply drove the pricing power of the last two years, not cost-push as producers claim, and profits are at peak-of-cycle levels. We believe the steel producers are in a much tougher position, with weaker customer demand and rising costs.

We have lowered our European Steel industry view to Cautious, and see 1% downside potential for the industry. Arcelor remains our top pick in the industry. In our view, it has the best balance between high earnings leverage to the steel cycle peaking in 1H05, and low financial vulnerability. It also has the greatest exposure to low-cost production regions such as Brazil.

Trends vary by region

The world's regional steel markets are showing different pricing trends and consumption patterns. Asian markets are showing the strongest pricing power, with producers achieving 2Q05 prices increases capable of offsetting the higher raw material costs. In contrast, European producers are struggling with a situation of high inventories, overproduction and demand slowdown.

Japanese Steel industry view is Attractive. The Japanese steel producers' prices continue to rise, and profits should continue to increase in 2005. Japanese players will also benefit from a sales mix improvement towards high steel grades as Japanese manufacturers are expanding into other parts of Asia. We expect the market for these high grades to be tight over the next year or two and contract prices to maintain strong momentum.

In Latin America, steel demand remains strong going into 2005, although the growth rate is slowing, with consumption up 8.9% YoY in 1Q05 compared with 21% in 1Q04. We expect steel consumption in Latin America to post a healthy 7.3% increase in 2005 thanks to strong demand from the autoparts and construction sectors, before slowing to a more normalised level of 3.5% in 2006. This slowdown is in line with the deceleration of the strong 6% GDP growth we saw in 2004, to our forecast levels of 3.9% in 2005 and 3.2% longer term.

We expect the market to remain tight as no major capacity expansions have been announced and producers are focusing on semi-finished steel for the export market. Latin American steelmakers are operating close to full capacity and will be able to maintain finished steel prices in line with average export prices or even charge a moderate premium of 10-15%. Domestic prices in Brazil are currently in line with international prices, with Brazilian HRC at US$660/ton, following a series of price increases over the past few months and a strengthening of the real against the US dollar. We expect local steel prices to remain relatively flat throughout most of the year before weakening in 2006 in line with the global market. Brazilian steel producers are more likely to be price followers than price setters given their relative size and the Brazilian government's recent decision to eliminate import

tariffs on about 15 steel products. We do not expect imports to be significant owing to the high cost of internal logistics and financing.

In China, spot prices have continued to rise by 10-15% to new highs in the past three months. Asian steel producers have pushed through 5-10% sequential price increases for their major products during 2Q contract pricing, on the back of the higher-than-expected settlement of raw materials.

Although fundamental supply/demand remains tight, we are seeing some signs of softening demand, mainly as a result of seasonality. 2Q spot prices are consequently likely to soften. However, the softening in pricing will not be significant as inventories remain low and most producers are running at high utilisation rates.

Major producers are planning to increase contract prices further during 3Q to completely offset the incremental increase in raw material input costs. Baosteel and China Steel will also announce domestic quarterly contract prices for 3Q in May, which may prove to be a good indication of future price direction.

In the US steel service center, inventories are high, but there are several factors that we believe will mitigate any pressure from this on steel prices:

- Iron ore producers have pushed through a 71.5% price increase for April 2005 negotiations, which will put cost pressure on European and Asian steel producers, which are likely to raise prices;
- European steel producers have raised their flat-rolled prices to approximate US levels, while China has recently pushed through increases above US levels;
- China will be a net importer of steel for the foreseeable future; and
- preliminary steel import data for the US for February indicate that imports are down 2% on a linked month basis from 2.176mt in January to 2.142mt.

We believe that US spot hot rolled steel prices, which are US$600-620/ton, will move modestly lower late in the second quarter and average US$50/ton below the 2004 level this year. However, this should be approximately offset by higher contract pricing.

Exhibit 8

Pricing Forecasts by Region, 2005–07

US$/t	2005	2006	2007
Europe	650	595	592
US	660	580	535
Japan	570	580	550
Asia*	600	580	550
Latin America	660	580	530

Asia = China, Korea, Taiwan and India
Source: Morgan Stanley Research estimates

Exhibit 9

Global Operating Rate - Crude Steel

(%)	1998	1999	2000	2001	2002	2003	2004e	2005e	2006e	2007e	2008e
EU (15)	84	82	87	85	89	90	94	94	94	95	95
Other Europe	73	65	71	70	72	78	89	90	90	90	89
Former USSR	63	74	86	89	91	95	96	97	93	89	85
NAFTA	92	88	90	87	85	86	90	89	92	94	94
Central/South America	85	78	85	63	68	68	69	75	73	70	66
China	79	89	92	88	92	89	92	93	92	93	93
Japan	62	64	73	71	74	92	93	94	89	86	86
India	75	75	79	76	81	86	93	97	100	99	96
Other Asia/Pacific	76	74	77	74	76	76	76	77	78	79	79
Africa/Middle East	69	65	65	71	71	72	69	69	68	68	68
Global Operating Rate	77	77	83	80	83	86	89	90	89	89	88

e = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Exhibit 10

Global Steel Supply/Demand, 2001-08e

(Million Metric Tonnes)	2001	2002	2003	2004	2005e	2006e	2007e	2008e
Regional Capacity — Crude Steel								
EU (15)	186	178	179	179	180	180	180	180
% Change YoY	*-1.1*	*-4.2*	*0.6*	*0.0*	*0.6*	*0.0*	*0.0*	*0.0*
Other Europe	66	67	67	67	69	71	73	75
% Change YoY	*1.1*	*0.2*	*0.3*	*0.3*	*3.0*	*3.0*	*3.0*	*3.0*
Former USSR	113	112	114	116	119	127	134	141
% Change YoY	*-1.5*	*-0.9*	*1.8*	*1.8*	*3.0*	*6.8*	*5.0*	*5.0*
NAFTA	136	143	145	146	149	149	149	149
% Change YoY	*-8.6*	*4.8*	*1.7*	*0.7*	*1.9*	*0.0*	*0.0*	*0.0*
Central/South America	61	63	66	68	69	73	76	84
% Change YoY	*27.5*	*3.8*	*4.1*	*3.8*	*1.0*	*5.8*	*4.7*	*9.8*
China	172	198	247	296	337	374	403	430
% Change YoY	*24.8*	*15.1*	*24.7*	*19.8*	*13.9*	*11.0*	*7.8*	*6.7*
Japan	145	145	121	121	122	123	123	123
% Change YoY	*-0.3*	*-0.3*	*-16.8*	*0.0*	*1.2*	*0.8*	*0.0*	*0.0*
India	43	44	45	47	48	50	54	60
% Change YoY	*9.3*	*3.0*	*1.5*	*3.4*	*3.5*	*4.3*	*7.1*	*11.9*
Other Asia/Pacific	110	111	114	116	119	120	122	124
% Change YoY	*4.4*	*1.4*	*2.1*	*2.5*	*1.8*	*1.3*	*1.7*	*1.6*
Africa/Middle East	37	40	42	44	46	49	51	54
% Change YoY	*4.4*	*7.2*	*4.1*	*5.4*	*5.4*	*5.4*	*5.4*	*5.4*
Global Capacity	**1,070**	**1,101**	**1,138**	**1,200**	**1,258**	**1,317**	**1,366**	**1,420**
% Change YoY	***4.0***	***2.9***	***3.4***	***5.4***	***4.9***	***4.6***	***3.7***	***4.0***
Regional Production - Crude Steel								
EU (15)	158	159	160	168	169	170	171	172
% Change YoY	*-3.1*	*0.3*	*1.0*	*5.0*	*0.6*	*0.2*	*0.6*	*0.7*
Other Europe	46	48	52	60	63	65	66	67
% Change YoY	*-0.6*	*3.7*	*9.1*	*14.2*	*4.5*	*3.2*	*2.8*	*1.7*
Former USSR	100	102	108	112	115	118	119	119
% Change YoY	*1.2*	*1.5*	*6.3*	*3.5*	*3.1*	*2.7*	*0.8*	*0.0*
NAFTA	119	122	125	132	133	137	140	140
% Change YoY	*-11.4*	*2.5*	*2.6*	*5.5*	*0.8*	*3.3*	*1.9*	*0.0*
Central/South America	39	43	44	47	52	53	54	55
% Change YoY	*-4.7*	*11.0*	*3.8*	*6.5*	*9.1*	*3.6*	*0.1*	*3.4*
China	151	182	220	272	315	342	373	401
% Change YoY	*18.6*	*20.8*	*20.8*	*23.8*	*15.6*	*8.7*	*9.0*	*7.5*
Japan	103	108	111	113	115	110	106	106
% Change YoY	*-3.4*	*4.7*	*2.6*	*2.0*	*2.1*	*-4.3*	*-3.4*	*-0.3*
India	33	36	39	43	47	50	54	58
% Change YoY	*5.8*	*8.6*	*8.0*	*12.0*	*8.0*	*7.0*	*7.0*	*8.0*
Other Asia/Pacific	81	84	86	89	91	94	96	98
% Change YoY	*0.3*	*4.5*	*2.0*	*3.2*	*2.8*	*2.9*	*2.0*	*2.0*
Africa/Middle East	27	28	30	30	32	33	35	37
% Change YoY	*14.6*	*6.6*	*5.1*	*1.7*	*5.0*	*5.0*	*5.0*	*4.8*
Global Production	**856**	**911**	**975**	**1,066**	**1,131**	**1,173**	**1,213**	**1,253**
% Change YoY	***0.5***	***6.5***	***7.0***	***9.4***	***6.1***	***3.7***	***3.5***	***3.3***
Regional Demand - Finished Steel								
EU (15)	140	138	137	144	146	149	151	154
% Change YoY	*-2.9*	*-1.2*	*-0.3*	*4.9*	*1.6*	*1.8*	*1.4*	*1.7*
Other Europe	34	36	40	44	47	50	52	54
% Change YoY	*-4.7*	*6.7*	*10.4*	*9.5*	*7.0*	*5.7*	*3.7*	*4.4*
Former USSR	39	38	39	42	45	48	49	51
% Change YoY	*7.8*	*-4.2*	*4.4*	*8.3*	*6.5*	*5.0*	*3.9*	*3.9*
NAFTA	134	137	131	148	149	154	157	160
% Change YoY	*-11.6*	*2.1*	*-4.8*	*13.2*	*0.8*	*3.3*	*1.8*	*2.0*
Central/South America	27	28	28	31	36	38	38	40
% Change YoY	*-1.3*	*2.7*	*0.1*	*10.9*	*16.7*	*4.9*	*1.6*	*4.6*
China	153	186	232	274	299	321	348	372
% Change YoY	*23.1*	*21.0*	*25.2*	*17.8*	*9.3*	*7.3*	*8.4*	*6.8*
Japan	73	72	73	75	77	75	73	73
% Change YoY	*-3.8*	*-2.0*	*2.4*	*2.5*	*2.0*	*-2.6*	*-2.7*	*0.0*
India	27	29	30	32	33	36	38	41
% Change YoY	*4.1*	*4.8*	*5.2*	*5.2*	*6.0*	*6.6*	*7.5*	*8.0*
Other Asia/Pacific	102	115	115	124	130	135	139	144
% Change YoY	*1.2*	*12.0*	*0.5*	*7.6*	*4.7*	*3.7*	*3.0*	*3.7*
Africa/Middle East	39	43	46	48	51	53	56	59
% Change YoY	*14.4*	*8.6*	*7.8*	*5.0*	*5.0*	*5.0*	*5.0*	*5.0*
Global Demand	**770**	**820**	**872**	**962**	**1,014**	**1,058**	**1,101**	**1,148**
% Change YoY	***1.6***	***6.5***	***6.4***	***10.3***	***5.4***	***4.3***	***4.1***	***4.2***

e = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Copper — Supply/Demand to Remain Tight for Another 18 Months

Demand surprise drives price increases

Over the next 18 months, we expect the stock/consumption ratio to remain at critically low levels (1.2–1.3 weeks of consumption). We have revisited our global copper supply/demand model and increased our 2005 market deficit forecast from 81kt to 181kt, and increased our average realised 2005 price forecast from US$1.29/lb to US$1.40/lb. We expect the market to move into balance in 2006. The key swing factor continues to be Chinese demand, for which we have upgraded our forecasts. It is not until 2007 that we see the market moving into a substantial surplus. At this point, fundamentals should reach a turning point, but we expect historically low inventory levels to keep copper prices well above mid-cycle levels.

Our 2005 price forecast raised to US$1.40/lb

We forecast an average realised copper price of U$1.40/lb in 2005 and US$1.25/lb in 2006. We note that upside surprise to this number is certainly possible under our supply/demand outlook. Exhibit 13 shows the relationship between copper prices and days of consumption. As we continue to forecast stock to consumption prices to be at critical levels, we have upgraded our price forecasts. In 2006, we expect prices to fall from current levels as the market returns to balance. At this point we expect an unwinding of 12-month high speculative long positions to take some heat out of the copper price.

Potential for Chinese demand surprises on the upside.

We estimate China will account for 22% of world copper consumption in 2005, rising to 25% by 2007. We have upgraded our 2005 Chinese copper consumption growth forecast to 11% as a result of surprisingly strong industrial production growth of 16.9% in January-February 2005. This is a major increase from our previous 8% assumption. By comparison, our China economists expect IP to grow at 12.5% in 2005, slowing to a trend 9–10% level in two to three years.

Demand outlook: Chinese growth drives price

Chinese January import numbers were certainly encouraging as net cathode imports totalled 111,000t, and concentrates once again topped 300,000t. However, the copper semis figures for December and January were a little disappointing. Data from the China National Bureau of Statistics for January show that copper semis production fell by 9.7% from December's level to 329,700t. Though the January 2005 figure was 41% up on the same month of 2004, it was some 5% below last year's monthly average. We think that Chinese wire manufacturers are finding it more difficult to pass on higher raw material costs.

Exhibit 11

Copper — Cash LME Price Forecast (US$ Per Pound)

	Old	New	% Chg
1Q-05	1.40	1.44	3
2Q-05e	1.28	1.50	17
3Q-05e	1.24	1.35	9
4Q-05e	1.22	1.30	7
1Q-06e	1.15	1.30	13
2Q-06e	1.15	1.26	10
3Q-06e	1.15	1.22	6
4Q-06e	1.15	1.20	4
2005e	1.29	1.40	8
2006e	1.15	1.25	8
2007e	1.05	1.10	5
2008e, Mid-cycle	1.00	1.00	0

Source: Morgan Stanley Research estimates

Exhibit 12

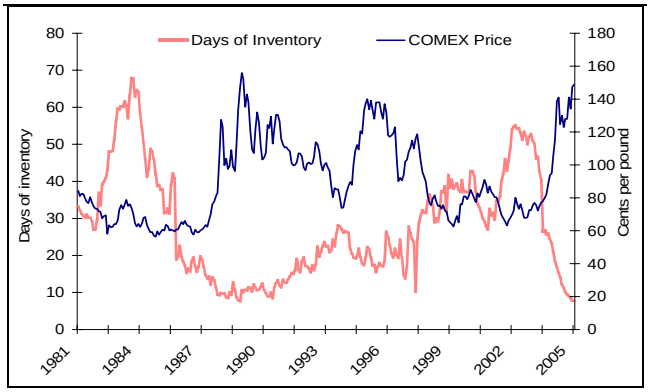
Revised Global Copper Supply Demand Model: Market to Move into Balance in 2006

'000 t	2004	2005e	2006e	2007e	2008e	CAGR %
Production						
Total World Prodn	15,879	17,120	17,986	18,848	19,631	
Chg YoY (%)	4.3	7.8	5.1	4.8	4.2	3.4
World ex-China	13,836	14,640	15,385	16,167	16,730	5.2
% Change YoY	3.3	5.8	5.1	5.1	3.5	
Demand						
Total World Demand	16,755	17,301	17,971	18,639	19,398	
Chg YoY (%)	8.8	3.3	3.9	3.7	4.1	4.7
World ex-China	13,287	13,451	13,741	13,999	14,318	
% Change YoY	7.6	1.2	2.2	1.9	2.3	3.0
Surplus/(Deficit)	**-876**	**-181**	**15**	**209**	**233**	
Total Stocks (incl Producer and Consumer)	597	416	432	641	874	
Stocks:Consumption Ratio (Weeks)	1.9	1.3	1.2	1.8	2.3	
Copper Price US$/lb		**1.40**	**1.25**	**1.10**	**1.00**	

e = Morgan Stanley Research estimates
Source: CRU, Brook Hunt, Morgan Stanley Research

Exhibit 13

Copper Price vs Stocks/Consumption (Days)



Source: CRU, Brook Hunt, Morgan Stanley Research

Production response is coming, but is it enough?

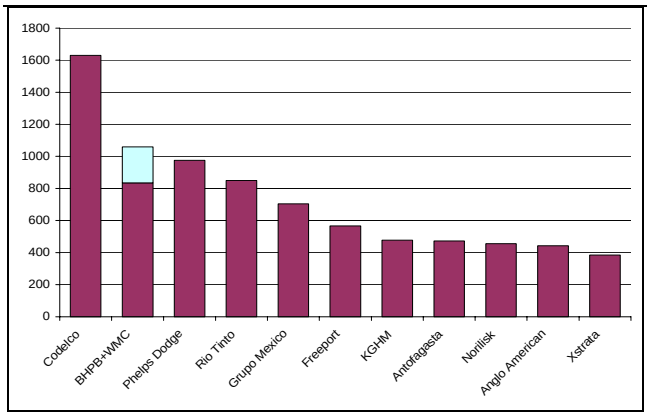
Twenty-year high copper prices are a powerful incentive for copper miners to lift production. We expect world copper production to increase by 7.8% in 2005 and 5.1% in 2006. The large lift in 2005 largely reflects a return to full production of the Freeport's Grasberg mine. Consolidation in the copper industry is continuing. If BHPB is successful in its proposed takeover of WMC Resources, it will make the company the world's second-largest producer. As in iron ore and other commodities, consolidation can be a powerful driver of longer-term pricing. During the last copper price downturn, three of the top four producers all contributed to voluntary production cuts, which arrested the stock build and price decline.

Risks: speculative long positions reach 12-month high

Speculative long positions on the COMEX exchange are at 12-month high levels. The 40,000 contract level has traditionally been a resistance level. This is not surprising given that copper prices are now trading at their highest level in 20 years. This indicator serves as a reminder that many financial investors are running the so called 'carry trade' of borrowing at the short end of the yield curve and lending at the long end or seeking yield in risky assets. With the US Federal Reserve tightening, we are likely to see some unwinding of these speculative longs and possibly a correction in price. We witnessed this in October 2004, which retrospectively proved a good buying opportunity.

Exhibit 14

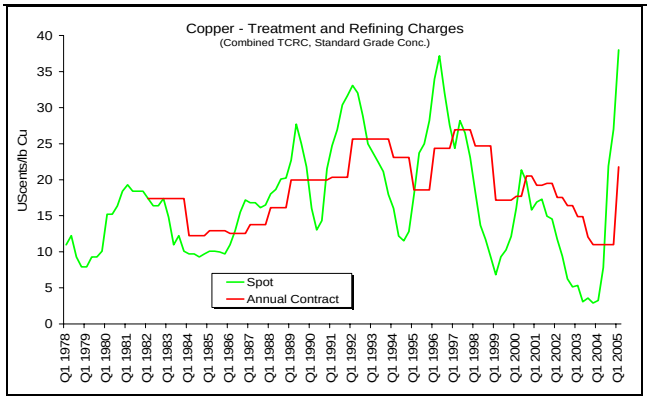
Mined Copper Producers Continue to Consolidate (2004, '000t)



Source: CRU, Morgan Stanley Research

Exhibit 15

Sharp Increase in TC/RCs Signals Higher Production



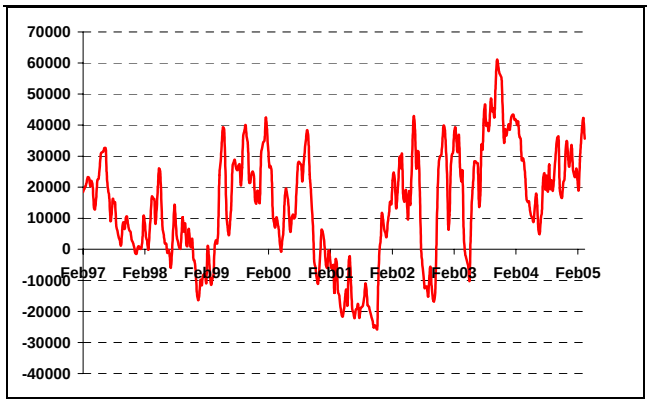
Source: CRU, Brook Hunt

Copper treatment charges skyrocket

The upturn in global copper concentrate supply is being signalled by rocketing spot treatment charges. We highlight the dramatic change in fortunes for the copper smelters as the concentrate miners lift production. Smelter start-up delays in India and Thailand have accentuated the increase in TC/RC's (treatment and refining charges). We estimate that over 1.9mt of contained copper in concentrate production will be activated in 2005 and 2006.

Exhibit 16

Copper Net Long Positions Still at High Levels (Open Contracts)



Source: Bloomberg

Exhibit 17

Global Copper Supply/Demand Model

'000 t	2001	2002	2003	2004	2005e	2006e	2007e	2008e	CAGR (%) 2004-08e
Production									
North America	2,698	2,308	2,071	2,214	2,405	2,531	2,595	2,697	
% Change YoY		*-14.5*	*-10.3*	*6.9*	*8.6*	*5.3*	*2.5*	*4.0*	*-1*
South and Central America	3,540	3,539	3,673	3,751	3,879	4,133	4,433	4,655	
% Change YoY		*0.0*	*3.8*	*2.1*	*3.4*	*6.5*	*7.2*	*5.0*	*4*
Western Europe	1,804	1,840	1,803	1,821	1,892	1,942	2,114	2,114	
% Change YoY		*2.0*	*-2.0*	*1.0*	*3.9*	*2.6*	*8.9*	*0.0*	*3*
East and Central Europe	548	565	577	595	574	568	568	568	
% Change YoY		*3.1*	*2.2*	*3.1*	*-3.5*	*-1.0*	*0.0*	*0.0*	*1*
CIS	1,415	1,389	1,308	1,400	1,500	1,490	1,480	1,480	
% Change YoY		*-1.8*	*-5.9*	*7.0*	*7.1*	*-0.7*	*-0.7*	*0.0*	*1*
Japan	1,442	1,373	1,422	1,383	1,573	1,603	1,603	1,603	
% Change YoY		*-4.8*	*3.6*	*-2.7*	*13.7*	*1.9*	*0.0*	*0.0*	*2*
China / Mongolia	1,526	1,635	1,838	2,043	2,480	2,601	2,681	2,901	
% Change YoY		*7.2*	*12.4*	*11.1*	*21.4*	*4.9*	*3.1*	*8.2*	*10*
Other Asia	1,423	1,465	1,535	1,647	2,053	2,252	2,332	2,463	
% Change YoY		*3.0*	*4.8*	*7.3*	*24.7*	*9.7*	*3.6*	*5.6*	*9*
Australasia	579	553	515	517	518	560	594	596	
% Change YoY		*-4.5*	*-6.8*	*0.3*	*0.2*	*8.1*	*6.2*	*0.4*	*0*
Africa	483	475	460	509	596	676	836	952	
% Change YoY		*-1.7*	*-3.3*	*10.7*	*17.1*	*13.4*	*23.7*	*13.8*	*9.6*
Total Potential Production	**15,457**	**15,141**	**15,202**	**15,879**	**17,470**	**18,355**	**19,235**	**20,029**	
% Change YoY		*-2.0*	*0.4*	*4.5*	*10.0*	*5.1*	*4.8*	*4.1*	*3.7*
Less Disruption Allowance	0	0	0	0	-349	-369	-387	-398	
Total World Production	**15,457**	**15,141**	**15,229**	**15,879**	**17,120**	**17,986**	**18,848**	**19,631**	
% Change YoY		***-2.0***	***0.6***	***4.3***	***7.8***	***5.1***	***4.8***	***4.2***	***3.4***
World ex-China	13,932	13,506	13,391	13,836	14,640	15,385	16,167	16,730	5.2
% Change YoY		***-3.1***	***-0.9***	***3.3***	***5.8***	***5.1***	***5.1***	***3.5***	
Consumption									
North America	2,951	3,088	2,862	3,184	3,280	3,362	3,429	3,498	
% Change YoY		*4.6*	*-7.3*	*11.2*	*3.0*	*2.5*	*2.0*	*2.0*	*2.5*
South and Central America	536	410	493	549	561	583	608	637	
% Change YoY		*-23.4*	*20.1*	*11.5*	*2.2*	*3.9*	*4.3*	*4.6*	*2.2*
Western Europe	3,838	3,672	3,602	3,668	3,679	3,734	3,763	3,837	
% Change YoY		*-4.3*	*-1.9*	*1.8*	*0.3*	*1.5*	*0.8*	*2.0*	*-0.3*
East and Central Europe	387	348	353	381	397	412	429	452	
% Change YoY		*-10.1*	*1.4*	*8.1*	*4.2*	*3.8*	*4.2*	*5.3*	*1.8*
CIS	378	451	511	669	693	714	729	743	
% Change YoY		*19.3*	*13.3*	*31.0*	*3.6*	*3.0*	*2.0*	*2.0*	*11.6*
Japan	1,145	1,164	1,202	1,254	1,222	1,210	1,204	1,198	
% Change YoY		*1.7*	*3.3*	*4.3*	*-2.5*	*-1.0*	*-0.5*	*-0.5*	*0.8*
China	2,256	2,557	3,056	3,468	3,850	4,230	4,640	5,080	
% Change YoY		*13.3*	*19.5*	*13.5*	*11.0*	*9.9*	*9.7*	*9.5*	*12.8*
Other Asia	2,630	2,897	2,938	3,198	3,228	3,324	3,425	3,536	
% Change YoY		*10.2*	*1.4*	*8.9*	*0.9*	*3.0*	*3.0*	*3.2*	*4.5*
Australasia	171	190	184	169	173	177	181	181	
% Change YoY		*11.1*	*-3.2*	*-8.1*	*2.1*	*2.3*	*2.1*	*0.5*	*0.9*
Africa	170	200	202	213	218	224	231	235	
East and Central Europe		17.6	1.1	5.7	2.0	3.0	3.0	2.0	5.2
Total World Demand	**14,461**	**14,977**	**15,403**	**16,755**	**17,301**	**17,971**	**18,639**	**19,398**	
% Change YoY		***3.6***	***2.8***	***8.8***	***3.3***	***3.9***	***3.7***	***4.1***	***4.7***
World ex-China	12,205	12,420	12,347	13,287	13,451	13,741	13,999	14,318	
% Change YoY		***1.8***	***-0.6***	***7.6***	***1.2***	***2.2***	***1.9***	***2.3***	***3.0***
Surplus/(Deficit)	**996**	**165**	**-174**	**-876**	**-181**	**15**	**209**	**233**	

e = Morgan Stanley Research estimates

Source: CRU, Company data, Morgan Stanley Research

Please see analyst certification and other important disclosures starting on page 57.

Exhibit 18

Global Copper Contained in Concentrate Production Changes

Owner	Mine	2003	2004	2005e	2006e	2007e	2008e	2009e
		YoY Change ('000 t)						
Amalg	Eloise	0	0	0	-6	-12	0	0
Asarco	Mission Complex	1	9	19	20	0	0	0
Atlas Cons.	Cebu (Toledo)	15	0	10	40	0	0	0
Aur	Louvicourt	0	-17	-22	0	0	0	0
Birla Copper	Mount Gordon (Gunpowder)	0	16	34	0	0	0	0
Birla Copper	Nifty	-2	0	35	26	0	0	0
Breakwater Resources	Myra Falls	0	4	0	0	0	0	-15
Cananea	Cananea	0	50	0	0	0	8	8
Candelaria	Candelaria	0	-11	46	-5	-5	-5	-35
Cerro Verde	Cerro Verde	-6	0	0	0	88	94	0
Chino Mines	Chino	3	50	29	0	0	0	0
Codelco	Alejandro Hales (Mansa Mina	4	0	0	0	42	62	47
Codelco	El Teniente	0	107	-7	34	0	0	0
Collahuasi	Collahuasi	-1	103	-14	25	0	-57	20
CVRD	Alemao-Igarape Bahia	-31	0	23	8	0	120	40
CVRD	Cristalino	0	0	0	0	50	100	0
Doe Run	Cobriza	0	0	0	-16	0	0	0
Equinox Resources	Lumwana	7	0	0	0	90	35	0
First Quantum	Kansanshi	21	0	38	0	0	19	0
First Quantum	Lufua	0	0	0	0	0	25	60
General Minerals Corpo	Vizcachitas	2	0	0	0	0	40	13
Highland Valley	Highland Valley	-9	-8	-1	0	0	0	-78
Hudson Bay	Flin Flon	0	-3	-6	0	0	0	0
Imperial	Huckleberry	0	-5	0	1	-19	-10	0
Ivanhoe Mines	Oyu Tolgoi (Turquoise Hill)	14	0	0	0	0	74	35
Kennecott	Bingham Canyon	29	-17	-36	0	0	0	0
KGHM	Lubin	0	-11	0	0	0	0	0
KGHM	Rudna	-4	-15	0	0	0	0	0
Las Cenizas	Cabildo	-13	0	-10	0	0	0	0
Manhattan Minerals	Tambo Grande	11	0	0	0	0	0	40
Mex De Cobre	La Caridad	-7	20	0	0	0	15	15
Min Caraiba	Jaguarari	-4	4	-10	-10	-12	0	0
Min Rio Tinto	Cerro Colorado (Spain)	-78	0	4	27	12	0	0
Minera Escondida	Escondida	-1	198	86	69	0	0	-20
Minera Los Pelambres	Los Pelambres	-149	22	0	0	3	59	-12
Minera Raura	Raura	6	0	0	0	-8	-7	0
Mount Isa	Mount Isa (copper)	-12	-19	-1	0	0	0	0
NAN	Storliden	-9	-3	0	0	-3	-6	0
New Boliden	Boliden Area Operations	5	0	0	0	0	0	-9
Newcrest Mining	Ridgeway	0	-2	-12	0	-9	0	0
Newcrest Mining	Telfer	-11	15	53	-4	-2	0	0
Newmont Mining	Batu Hijau	0	-3	-10	-9	-9	-9	0
NICICO	Meyduk	2	15	25	5	0	0	-5
NICICO	Songon	0	0	12	33	0	0	0
Norilsk	Norilsk concentrators	5	20	20	0	0	0	0
Ok Tedi	Ok Tedi	0	-3	0	-10	0	0	0
O'okiep	O'okiep Various	-6	-5	-5	0	0	0	0
Pan Australian	Phu Kham	-11	0	0	0	25	33	0
Placer Pacific	Osborne	14	-2	-5	0	0	-5	-31
Quadra Mining	Robinson	1	10	56	14	-4	-7	8
RTB Bor	Majdanpek	224	10	0	15	17	0	0
Santa Elina Gold	Chapada	0	0	0	0	36	37	5
Sossego	Sossego	14	90	80	-10	-10	-10	0
Sterlite Industries	Thalanga/Reward/Highway	8	-11	-28	0	0	0	0
Tintaya	Tintaya	54	61	18	1	0	0	0
Universal Resources	Roseby		0	0	0	13	45	0
Various	China Mines	0	71	45	24	38	0	0
WMC Resources	Olympic Dam	0	51	22	1	5	0	0
Ziryanovsk	Ziryanovsk concentrator	0	0	0	0	-13	0	0
Total Other		32	**179**	**686**	**157**	**-77**	209.96	115
World		**118**	**971**	**1173**	**429**	**237**	**860**	**200**

e = Morgan Stanley Research estimates

Source: CRU, Brook Hunt, Morgan Stanley Research

Exhibit 19

Global Copper SX/EW Production Changes

Owner	Mine	2003	2004	2005e	2006e	2007e	2008e	2009e
		YoY Change *('000 t)*						
Adastra	Kolwezi	0	0	0	0	0	18	12
Andacollo	Andacollo	-13	1	-1	0	0	-7	-9
BHP Billiton	Spence	0	0	0	15	160	25	0
Birla Copper	Nifty	0	0	0	0	-15	-12	0
Birla Copper	Mount Gordon (Gunpowder)	8	-28	-10	0	0	0	0
Cananea	Cananea	0	5	3	2	0	8	8
Cerro Verde	Cerro Verde	0	2	-10	-4	0	0	0
Chino Mines	Chino	0	4	9	16	0	0	0
Codelco	Alejandro Hales (Mansa Mina)	-1	8	8	0	0	0	134
Codelco	Gaby Sur	-11	0	0	0	127	8	0
Codelco	Chuquicamata	1	-7	11	70	0	18	-8
CVRD	Project 118	0	0	0	0	42	8	0
El Abra	El Abra	3	-1	0	0	0	0	-187
Erdenet	Erdenet	0	2	0	15	10	0	12
Explot. Minas	Dos Amigos	0	0	0	0	-3	-7	0
First Quantum	Kansanshi	-27	0	54	6	0	0	0
Frontera Copper	Piedras Verdes	1	0	0	0	32	0	0
J&W Holding AG	Muliashi North	0	0	0	0	30	4	0
Matrix Metals	Mount Watson/White Range	9	0	10	10	10	0	0
Michilla	Michilla SXEW	0	2	-1	1	0	-11	-8
Minera Escondida	Escondida	-1	5	-1	100	80	0	0
MK Gold	Las Cruces	0	0	0	30	35	0	0
Mopani Copper	Nchanga	7	0	-15	0	0	0	0
Myanmar Copper	Monywa (S&K)	0	4	7	9	48	48	48
Oxiana Resources	Sepon	0	0	30	30	0	0	0
Pan Australian	Puthep	0	0	0	0	0	10	15
Penoles	Milpillas	10	0	13	42	0	0	0
Phelps Dodge	Safford	6	0	0	0	0	64	24
Phelps Dodge	Miami (Phelps Dodge)	0	-9	0	3	16	24	0
Phelps Dodge	Tyrone	0	12	12	0	0	-11	-49
Polymet Mining	Northmet	0	0	0	0	15	19	0
Soquimich	Antucoya	0	0	0	0	0	49	21
Tenke Mining	Tenke Fungurume	0	0	0	0	0	19	21
Tesoro	El Tesoro	0	0	-6	-16	-8	4	3
Tethyan Copper	Reko Diq	-1	0	0	0	30	10	0
Zaldivar	Zaldivar	17	-9	0	0	-32	0	0
Total Other		31	**47**	**43**	**57**	**18**	**23**	**-21**
World		**39**	**36**	**156**	**386**	**595**	**310**	**15**

e = Morgan Stanley Research estimates

Source: CRU, Brook Hunt, Morgan Stanley Research

Uranium Oxide – Gaining Momentum on a Forecast Supply Deficit

Inventory cycle coming to an end

Our long-term price forecast for uranium oxide (U_3O_8) is US$20/lb, based the supply-side deficit we expect to last another decade at least. We expect uranium spot prices to average US$45/lb in 2006 and that producers will sign contracts at spot plus a premium (historically in the range of US$1-3/lb). We have a positive view of the outlook for the uranium miners. The largest two companies are WMR and Rio Tinto, which together control 25% of the market.

Our conclusions are based on our expectation that substantial uranium inventories from weapons decommissioning have come to an end. They have supplied as much as 45% of the market in recent years. The key points:

- Mine expansions are significantly lagging behind demand.
- Draw-down from inventory and the highly enriched uranium (HEU) programme from weapons disarmament is not able to meet our demand forecast.
- We expect the spot market price to peak in 2006, averaging US$45/lb.
- With most uranium being sold under contract, and individual contracts varying from two to five years, most producers do not expect to trade at the prevailing spot price until 2008 at the earliest owing to large legacy contracts.

Long-term spot price US$20/lb

Our price forecasts for uranium oxide are based on our forecast supply-side deficit, peaking in 2006 at 16,192t or 21% of global demand. Shorter term, we expect spot prices to continue to rise as the market renegotiates contracts in a tighter market. We expect the availability of spot material to become scarcer owing to the deep supply-side deficit. Our spot price forecasts reflect our expectation of tight market conditions. **However, it should take a number of years before this is translated to the revenue line of the producers, as most production is under contract with durations two to five years.**

Uranium is a relatively small market

The top five producers control 68% of the uranium oxide market, which is small and concentrated. On the demand side, 78 utilities consume uranium, compared with 10 producers and four traders on the supply side.

During the 1990s, uranium oxide prices fell owing to the supply surplus brought about by weapons decommissioning. This material has now worked its way through the nuclear electricity generators and, as a result, we forecast a deep supply-side shortage as no new mine capacity has been brought on line to replace the decommissioned weapons material.

Supply-side deficit looms

Mining fails to keep pace with demand. Uranium mine production in 2003 satisfied only 53% of our estimated demand for uranium. The balance of demand was met from stock depletion and dilution of weapons-grade highly enriched uranium. This has been the case for at least the past three years, when mine production accounted for only 55% of demand. This situation has, in our opinion, kept prices relatively low until recently, with utilities now starting to push prices higher in anticipation of a supply shortage.

Inventories will not last forever. While the nuclear fuel industry has relied on inventory stockpiles and dilution of weapons-grade uranium (most notably through the HUE programme) to meet the gap between production and demand, inventories are now running low.

Exhibit 20

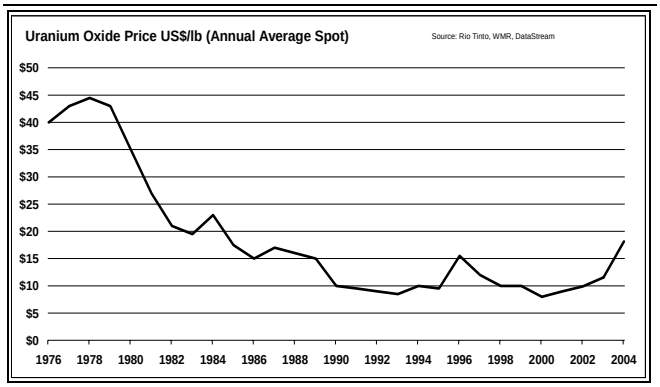
Uranium Oxide Supply and Price Summary, 2003–2008e

	2003	2004e	2005e	2006e	2007e	2008e L.Term
Surplus/(Deficit) t	3,000	0	(6,998)	(16,192)	(14,393)	(15,480)
Price Forecast						
Avg Spot (US$/lb)	11.55	18.43	29.75	45.00	28.00	20.00

e = Morgan Stanley Research estimates
Source: DataStream, Morgan Stanley Research

Exhibit 21

Uranium Price, 1976–2004



Source: Rio Tinto, WMR, DataStream

Top producers

The bulk of uranium production in the west is controlled by four companies: Cameco, Areva (Cogema), Rio Tinto and WMC. These four companies together control about 60% of world uranium production, and the top 10 control 88% (Exhibit 21). We expect tight markets to encourage new production, including an expansion at Olympic Dam (WMR/BHP), and Rossing in Namibia (Rio Tinto).

Higher prices to induce new capacity over time

Historically, development of uranium mines has been a slow process owing to the sensitive environmental and safety issues involved. Current uranium mine production accounts for only 53–55% of total demand. We believe that projects previously deferred owing to commercial reasons will be reviewed, with the likely outcome of new investment in the segment. We estimate that it takes three to seven years to develop a new uranium mine, depending on the particular sovereign, environmental and regulatory requirements.

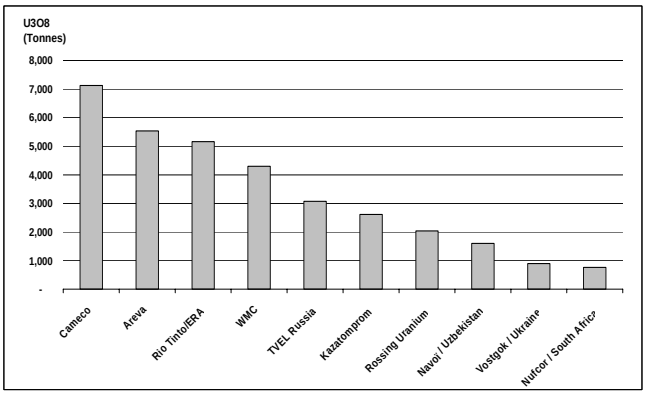
Modest demand growth seen

Nuclear power generation capacity increased at a CAGR of 1.1% from 1999–2003 (349,000 MW in 1999 to 365,000 MW in 2003). In the past decade, little nuclear power capacity has been added in the developed world owing to safety and environmental concerns. However, capacity additions have gained pace in high-growth and energy-short countries such as China and India. Continuing capacity additions in nuclear power facilities spread over 11 countries amount to about 6% of the current world nuclear power generation capacity.

The EIA estimates the share of nuclear power in total electricity generation will decline from the current 16% to 13% over the next 25 years. However, nuclear power generation capacity is expected to grow at an average rate of ~1% per year through 2015. Our demand assumption for growth in nuclear power generation capacity is just under 1% annually, and we expect similar demand growth in uranium from other sources.

Exhibit 22

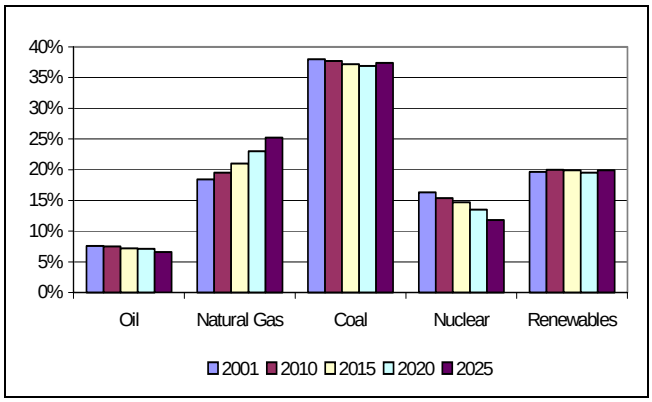
Uranium: Top 10 Producers (Tons, 2003)



Source: Morgan Stanley Research

Exhibit 23

Fuel Share of World Electricity Generation



Source: EIA, International Energy Outlook 2004

Exhibit 24

Global Uranium Supply/Demand, 2001–10e

(Tons)	2001	2002	2003	2004	2005e	2006e	2007e	2008e	2009e	2010e
Cameco	**7,217**	**6,111**	**7,127**	**7,906**	**8,171**	**8,866**	**9,622**	**9,857**	**10,477**	**10,894**
McArthur River (69.8%)	4,882	5,035	4,068	5,024	4,960	5,502	5,905	5,905	5,905	5,905
Rabbit Lake	1,755	439	2,279	2,087	2,230	2,230	961	385	192	-
Smith Ranch/Highland	267	341	462	318	500	654	846	846	846	846
Crow Butte	313	295	316	478	481	481	692	692	692	692
Inkai (60%)							180	300	420	510
Cigar Lake, Canada (50%)							1,038	1,730	2,422	2,941
Areva	**7,200**	**7,458**	**5,540**	**7,300**	**7,364**	**7,592**	**8,804**	**9,496**	**10,188**	**10,707**
France		18	9	0	0	0	0	0	0	0
Niger		1,975	2,035	2,035	2,035	2,035	2,035	2,035	2,035	2,035
Canada		5,421	3,414	5,229	5,229	5,457	6,669	7,361	8,053	8,572
McClean (70%)				3,076	3,076	3,076	3,076	3,076	3,076	3,076
McArthur River (30.2%)				2,153	2,153	2,380	2,555	2,555	2,555	2,555
Cigar Lake, Canada (37%)	0	-	-	-	-	-	1,038	1,730	2,422	2,941
Kazakhstan		44	82	100	100	100	100	100	100	100
WMC										
Olympic Dam	3,711	2,449	2,717	4,404	4,703	5,252	5,136	5,772	5,980	6188
ERA										
Ranger Mine (100%)	4,375	3,802	4,355	5,143	5,143	5,143	5,143	5,143	5,143	5,143
Rossing Uranium										
Rossing - ph. 1 till 2007	2,240	2,331	2,040	2,457	2,499	2,499	2,499			
Other										
Beverley	463		584	584	584	584	584	584	584	584
TVEL Russia			3,073	2,307	2,307	2,307	2,307	2,307	2,307	2,307
Kazatomprom			2,615	3,076	3,076	3,076	3,196	3,276	3,356	3,416
Navoï / Uzbekistan			1,600	2,307	2,307	2,307	2,307	2,307	2,307	2,307
Vostgok / Ukraine			900	900	900	900	900	900	900	900
Nufcor / South Africa			760	760	760	760	760	760	760	760
Honeymoon	0	-	-	0	0	500	700	850	1000	1000
Others	11,323	13,993	3,989	3,989	3,989	3,989	3,989	3,989	3,989	3,989
Total Production	**36,528**	**36,144**	**35,300**	**41,134**	**41,804**	**43,775**	**45,947**	**45,241**	**46,991**	**48,195**
World Demand	**64,000**	**65,434**	**68,435**	**69,206**	**69,985**	**70,773**	**71,571**	**72,377**	**73,192**	**71,674**
Surplus (Deficit) Production		**(29,290)**	**(33,135)**	**(28,072)**	**(28,181)**	**(26,998)**	**(25,623)**	**(27,135)**	**(26,200)**	**(23,479)**
Fuel Reprocessing				3,460	3,499	3,539	3,579	3,619	3,660	3,584
Inventory Dilution										
US DOE Inventory				2,922	2,922	2,922	2,192	1,461	731	0
- Released in Market						731	731	731	731	0
HEU Agreement				**70,750**	**65,367**	**59,214**	**52,678**	**45,757**	**38,451**	**30,761**
- Released in Market				5,383	6,152	6,537	6,921	7,306	7,690	7,690
Other Inventories				**30,761**	**11,532**	**-**	**-**	**-**	**-**	**-**
- Released in Market				19,229	11,532					
Net Surplus (Deficit)	**5,000**	**8,000**	**3,000**	**0**	**(6,998)**	**(16,192)**	**(14,393)**	**(15,480)**	**(14,120)**	**(12,205)**
Deficit as % of Demand	***7.8***	***12.2***	***4.4***	***0.0***	***-10.0***	***-22.9***	***-20.1***	***-21.4***	***-19.3***	***-17.0***

e = Morgan Stanley Research estimates

Source: Company Data, Morgan Stanley Research

Exhibit 25

Nuclear Electricity Generation and Additions

	Nuclear Electricity Generation 2003 billion kWh	% of Total Domestic Electricity 2003e	Reactors Operable Sep-04 No.	Reactors Under Construction Sep-04 MW	Reactors Under Construction Sep-04 No.	Reactors Planned Sep-04 MW	Reactors Planned Sep-04 No.	Reactors Proposed Sep-04 MWe	Reactors Proposed Sep-04 No.	MWe
Argentina	7	8.6	2	935	0	0	1	692	0	0
Armenia	1.8	35	1	376	0	0	0	0	0	0
Belgium	44.6	55	7	5,728	0	0	0	0	0	0
Brazil	13.3	3.7	2	1,901	0	0	1	1,245	0	0
Bulgaria	16	38	4	2,722	0	0	0	0	1	1,000
Canada	70.3	12.5	17	12,080	1	515	2	1,030	0	0
China	**79**	**1**	**15**	**11,471**	**4**	**4,500**	**6**	**6,000**	**20**	**17,000**
Czech Republic	25.9	31	6	3,472	0	0	0	0	2	1,900
Egypt	0	0	0	0	0	0	0	0	1	600
Finland	21.8	27	4	2,656	0	0	1	1,600	0	0
France	420.7	78	59	63,473	0	0	0	0	0	0
Germany	157.4	28	18	20,643	0	0	0	0	0	0
Hungary	11	33	4	1,755	0	0	0	0	0	0
India	**16.4**	**3.3**	**14**	**2,493**	**9**	**4,128**	**0**	**0**	**24**	**13,160**
Indonesia	0	0	0	0	0	0	0	0	2	2,000
Iran	0	0	0	0	1	950	1	950	3	2,850
Israel	0	0	0	0	0	0	0	0	1	1,200
Japan	**230.8**	**25**	**54**	**45,521**	**3**	**3,294**	**12**	**14,436**	**0**	**0**
Korea DPR (North)	0	0	0	0	1	950	1	950	0	0
Korea RO (South)	**123.3**	**40**	**19**	**15,880**	**1**	**960**	**8**	**9,200**	**0**	**0**
Lithuania	14.3	80	2	2,370	0	0	0	0	0	0
Mexico	10.5	5.2	2	1,310	0	0	0	0	0	0
Netherlands	3.8	4.5	1	452	0	0	0	0	0	0
Pakistan	1.8	2.4	2	425	0	0	1	300	0	0
Romania	4.5	9.3	1	655	1	655	0	0	3	1,995
Russia	**138.4**	**17**	**30**	**20,793**	**5**	**4,550**	**1**	**925**	**8**	**9,375**
Slovakia	17.9	57	6	2,472	0	0	0	0	2	840
Slovenia	5	40	1	676	0	0	0	0	0	0
South Africa	12.7	6.1	2	1,842	0	0	0	0	1	125
Spain	59.4	24	9	7,584	0	0	0	0	0	0
Sweden	65.5	50	11	9,459	0	0	0	0	0	0
Switzerland	25.9	40	5	3,220	0	0	0	0	0	0
Ukraine	76.7	46	14	12,218	1	950	0	0	1	950
United Kingdom	85.3	24	23	11,852	0	0	0	0	0	0
USA	763.7	19.9	103	97,497	1	1,065	0	0	0	0
Vietnam	0	0	0	0	0	0	0	0	2	2,000
WORLD	**2,525**	**16**	**438**	**363,931**	**29**	**22,517**	**35**	**37,328**	**71**	**55,000**

e = Morgan Stanley Research estimates

Source: World Nuclear Association, Morgan Stanley Research

Please see analyst certification and other important disclosures starting on page 57.

Iron Ore — Return to Balanced Market

Following the surprisingly strong iron ore settlements announced by CVRD and Rio Tinto for JFY2005/6 of a 71.5% price rise, we expect the steel industry to respond through several channels, namely:

- Higher utilisation of lower grade ore from domestic production in China.
- Encouragement and underwriting of new iron ore mines (Fortescue Metals and Hope Downs in Australia).
- Encouragement and underwriting of new concentrate, pellet and DRI plants that increase the grade of otherwise uncommercial ore.

Industry responses are likely to take time before affecting the seaborne-traded iron ore market. We expect infrastructure constraints in rail, port and ship capacity to remain influential in price negotiations for the next two years, after which we expect the response of the industry to be more in tune with demand growth.

Pricing forecast — new capacity limiting upside

Despite a forecast supply surplus in JFY 2006/7, we expect prices to remain at the recently negotiated price levels for JFY2005/6. Owing to the inherent lag in iron ore prices against global steel prices, we expect prices to rollover for JFY 2006/7. However, we do note that there is downside risk to our forecasts should negotiations become protracted and extended well beyond the start of the new Japanese financial year that commenced on April 1.

Our price forecasts for bulk commodities will likely have be more volatile than in previous years due to the larger than expected price rises for the current Japanese fiscal year, new marginal projects coming on line, and our expectation of a likely slowing in steel price rises in 2006. Coupled our expectation of an easing of infrastructure constraints and new supply, we are forecasting a steep decline in prices for JFY 2007/8 and a return to normalised prices by 2008/9.

Exhibit 26

Iron Ore Supply/Demand YoY Change, 2003–08e

Year	2003	2004	2005e	2006e	2007e	2008e
New Supply:						
Australia	26.4	23.3	38.4	29.9	19.0	24.8
Brazil	4.0	19.8	19.0	43.5	31.0	-12.5
Sth Africa	1.0	1.0	1.5	3.0	5.5	6.0
Total	31.4	44.1	58.9	76.4	55.5	18.3
Incremental Demand:						
China	36.7	51.7	43.7	23.5	37.9	34.4
World ex China	70.2	47.5	28.4	22.5	-1.8	5.7
World	106.9	99.2	72.1	46.0	36.1	40.1
Notional Surplus/(Deficit)	**-75.5**	**--55.1**	**-13.2**	**30.4**	**19.4**	**-21.7**

e = Morgan Stanley Research estimates

Source: Tex Report, Morgan Stanley Research

Exhibit 27

Iron Ore Prices, 2001–08e (US¢/dltu)

Year	Lump	% Chg	Fines	% Chg
JFY 2001/2	38.03	3.2	28.98	4.3
JFY 2002/3	36.13	-5.0	28.28	-2.4
JFY 2003/4	38.72	7.2	30.33	7.2
JFY 2004/5	45.93	18.6	35.98	18.6
JFY 2005/6e	78.77	71.5	61.70	71.5
JFY 2006/7e	78.77	0.0	61.70	0.0
JFY 2007/8e	47.26	-40.0	37.02	-40.0
Long Term	**41.30**	**-12.6**	**32.60**	**-11.9**

Dry long tonne unit *e = Morgan Stanley Research estimates*

Source: Morgan Stanley Research, Company Data

Exhibit 28

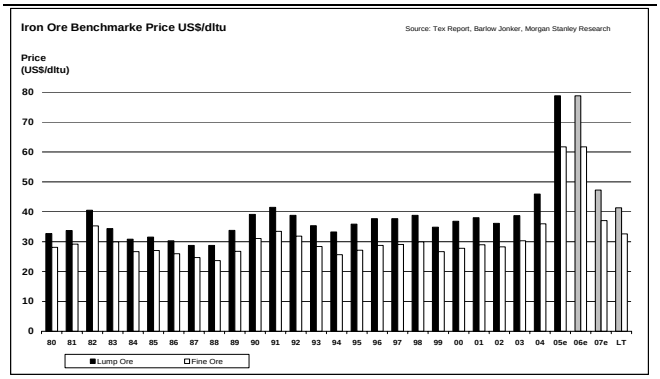
Iron Ore Price Forecast Changes, 2006–08e (US¢/dltu)

Year	New	Previous	% Chg	New	Previous	% Chg
JFY 2005/6	78.77	78.77	0	61.70	61.70	0
JFY 2006/7	78.77	66.95	18	61.70	52.45	18
JFY 2007/8	47.26	60.26	-22	37.02	47.73	-22
Long Term	**41.30**	**41.30**	**0**	**32.60**	**32.60**	**0**

Source: Morgan Stanley Research estimates

Exhibit 29

Iron Ore Prices, 1980–2007e (US¢/dltu)



e = Morgan Stanley Research estimates

Source: Tex Report, Morgan Stanley Research

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Iron ore prices lag steel prices - correlation 85%
Iron ore prices have historically lagged steel by 12 months. Our analysis of percentage changes in steel prices against iron ore has a correlation of 85% when the average HRC steel price is lagged by one year (Exhibit 30). Within Asia, our Steel analysts expect the major steel mills to re-coup the higher raw material costs through the increased pricing for JFY 2005/6. Based on historical correlations, this should imply at least a roll over of contract iron ore prices next year.

BHP Billiton seeking to establish a new price paradigm
At the time of writing, BHP Billiton had not announced a settlement on its iron ore sales for JFY 2005/6, despite CVRD and Rio Tinto announcing price rises of 71.5% for both lump and fines. At BHPB's post-results roundtable discussions, the company made it apparent that it is seeking to set a new pricing paradigm for iron ore to achieve delivered price parity with iron ore supplied from Brazil and India that have higher freight rates.

The freight rate differential between Brazil and Australia to Japan is currently about US$20/t. At current freight rates the landed price of Australian fines iron ore under the current JFY2004/5 contract is US$37.66/t and for Brazilian ore US$57.66/t. Should BHPB capture even half of the freight rate differential, it may be able to achieve an effective FOB price of US$77.60/dltu (or US$48.85/t) — a potential increase of 116%!

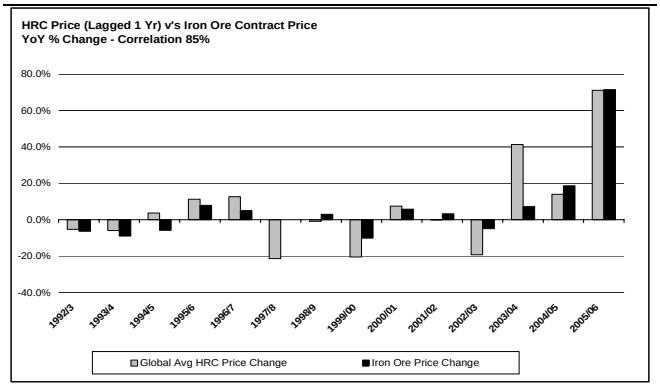
Our view on freight rates is that they will remain at current levels for another two years owing to time lags in capacity additions coupled with infrastructure constraints that effectively reduce fleet capacity utilisation rates.

Chinese domestic production surprises again in 2004
Chinese domestic production of iron ore surprised again in 2004 with a total of 289.8mt mined for the domestic steel industry, up from 261.1mt in 2003 — an increase of 11%. We forecast Chinese iron ore production to increase to 320mt in 2005 (up 10.4% YoY) despite having an average grade of only 30% or lower. Over the next three years, we expect Chinese domestic iron ore production growth to moderate to less than 3% by 2008.

The recent changes to Chinese licensing may affect Indian producers, in our view, as fewer Chinese companies will be able to handle imported iron ore. The new restrictions will only allow those producers with a requirement of 1mtpa or greater to import ore. The restrictions are clearly aimed at reducing the mark up of prices from traders with an expectation of reducing the iron ore spot price. As recently as early March, spot prices for Indian iron ore were as high as US$68/t FOB, compared with the new benchmark pricing of US$49.60/t for lump and US$38.85/t FOB for fines settled for Australian and Brazilian origin iron ore at 63% Fe.

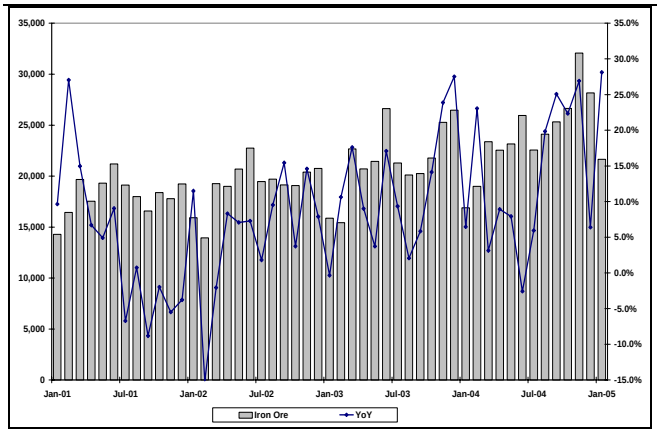
Should the Chinese government succeed in reducing the spot price of iron ore, we expect volumes will most likely stagnate for Indian exports relative to Australia and Brazil owing to the higher cost base. A reduction in the spot price may assist iron ore importers in keeping contract prices in check, as the exporters are believed to have used spot prices as a lever in recent negotiations.

Exhibit 30
HRC Price (Lagged 1 yr) vs Iron Ore Price (% Change YoY)



Source: Datastream, Morgan Stanley Research

Exhibit 31
Chinese Domestic Iron Ore Production, 2001–04



Source: Mysteel, Morgan Stanley Research

Exhibit 32

World Iron Ore Demand, 2001–08e

		2000	2001	2002	2003	2004	2005e	2006e	2007e	2008e	CAGR 83-03 %	CAGR 90-03 %	CAGR 03-08e %	CAGR 90-08e%
1. Steel Production														
World Crude Steel	mt	841	844	897	963	1,047	1,110	1,147	1,177	1,214	1.9	1.7	4.7	2.6
China Crude Steel	mt	127.2	152.3	181.6	220.1	272.4	316.0	342.0	372.0	399.0	8.9	9.7	12.6	10.5
World Crude Steel ex China	mt	714	692	716	743	774	794	805	805	815	0.9	0.4	1.9	0.8
World Crude Steel Production:														
BOF	mt	497	505	541	608	669	714	742	765	790	2.7	2.6	5.4	3.4
OHF	mt	38	36	35	34	35	34	34	34	34	-7.0	-9.1	0.0	-6.6
EAF	mt	288	288	306	317	343	362	371	378	390	3.4	3.0	5.1	2.2
BOF+OHF	mt	535	542	576	642	703	748	777	799	824	1.3	1.2	5.1	2.2
BOF (%)		*59.1*	*59.9*	*60.3*	*63.2*	*63.9*	*64.3*	*64.7*	*65.0*	*65.1*				
OHF (%)		*4.5*	*4.3*	*3.9*	*3.5*	*3.3*	*3.1*	*3.0*	*2.9*	*2.8*				
EAF (%)		*34.3*	*34.1*	*34.1*	*32.9*	*32.8*	*32.6*	*32.3*	*32.1*	*32.1*				
World ex China Crude Steel Prodn														
BOF	mt	392	380	390	425	450	459	463	460	461	1.2	0.5	1.6	0.8
OHF	mt	36	35	33	33	30	29	28	27	28	-6.8	-8.6	-2.9	-7.0
EAF	mt	268	262	277	281	294	306	314	318	326	3.0	2.5	1.3	-0.1
BOF+OHF	mt	428	415	423	458	480	488	491	487	489	-0.1	-0.7	1.3	-0.1
BOF (%)		*54.9*	*55.0*	*54.5*	*57.3*	*58.1*	*57.8*	*57.5*	*57.1*	*56.6*				
OHF (%)		*5.0*	*5.0*	*4.6*	*4.4*	*3.9*	*3.7*	*3.5*	*3.4*	*3.4*				
EAF (%)		*37.6*	*37.9*	*38.7*	*37.8*	*38.0*	*38.5*	*39.0*	*39.5*	*40.0*				
2. Iron Ore Volumes														
World Production	mt	1,089	1,061	1,107	1,220	1,319	1,391	1,437	1,473	1,513	2.1	1.6	4.4	2.4
World Seaborne Trade	mt	455	447	474	535	603	657	689	726	762	3.7	3.3	7.3	4.4
World Seaborne Trade ex China	mt	385	355	362	387	404	414	421	421	423	2.1	1.1	-17.3	5.2
World Seaborne Trade YoY Change (%)			*11*	*-2*	*6*	*13*	*13*	*9*	*5*	*5*	*5*			
World BOF/OHF Prodn of Crude Steel	mt	535	542	576	642	703	748	777	799	824				
Annual Increase/(dec)	mt	36.0	7.1	33.8	66.3	61.5	44.7	28.5	22.4	24.8				
Implied Increase/(Decline) in Iron Ore Demand (at 62% Fe)	mt	58.1	11.4	54.6	106.9	99.2	72.1	46.0	36.1	40.1				
Increase/(Decline) in Chin. Imports	mt	14.7	22.3	19.2	36.7	51.7	43.7	23.5	37.9	34.4				
Increase/(Decline) in World ex China demand	mt	43.4	-10.9	35.4	70.2	47.5	28.4	22.5	-1.8	5.7				
Increase/(Decline) in World ex China demand, seaborne	mt	30.3	-30.3	7.7	24.6	16.6	9.9	7.9	-0.6	2.0				

BOF = Blast Oxygen Furnace; OHF = Oxygen Hearth Furnace; EAF = Electric Arc Furnace

e = Morgan Stanley Research estimates

Source: IISI, Company Data, Morgan Stanley Research.

Exhibit 33

Chinese Iron Ore Demand

		2000	2001	2002	2003	2004e	2005e	2006e	2007e	2008e	CAGR 83-02 %	CAGR 90-02 %	CAGR 90-08e %
China Crude Steel Production													
BOF	mt	105.2	125.2	150.8	182.6	227.3	265.5	289.2	318.4	343.6	11.2	11.9	11.8
EAF	mt	20.2	25.3	29.0	36.0	43.6	49.0	51.3	52.1	53.9	6.9	6.2	7.5
OHF	mt	1.8	1.8	1.8	1.5	1.5	1.5	1.5	1.5	1.5			
Total	**mt**	**127.2**	**152.3**	**181.6**	**220.1**	**272.4**	**316.0**	**342.0**	**372.0**	**399.0**	**8.3**	**8.8**	**9.5**
Annual Increase in BOF/OHF	mt	2.6	19.9	25.6	31.5	44.7	38.2	23.7	29.2	25.2			
Cumulative Increase from 03		-	-	-	31.5	76.2	114.4	138.1	167.3	192.5			
Ratio													
BOF (%)		*82.7*	*82.2*	*83.0*	*83.0*	*83.4*	*84.0*	*84.6*	*85.6*	*86.1*			
EAF (%)		*15.9*	*16.6*	*16.0*	*16.4*	*16.0*	*15.5*	*15.0*	*14.0*	*13.5*			
OHF (%)		*1.4*	*1.2*	*1.0*	*0.7*	*0.6*	*0.5*	*0.4*	*0.4*	*0.4*			
Iron Ore Expansions	**mt**	**-13.3**	**-6.9**	**14.4**	**29.7**	**28.7**	**30.0**	**25.0**	**15.0**	**10.0**			
Domestic Iron Ore Production	mt	223.9	217.0	231.4	261.1	289.8	319.8	344.8	359.8	369.8	3.8	2.1	3.7
Chge YoY (%)		*-5.6*	*-3.1*	*6.6*	*12.8*	*11.0*	*10.4*	*7.8*	*4.4*	*2.8*			
Imports Iron Ore	mt	70.0	92.3	111.5	148.2	199.9	243.6	267.1	305.1	339.5	18.6	18.7	17.7
Chge YoY (%)		*26.5*	*31.9*	*20.8*	*32.9*	*34.9*	*21.9*	*9.6*	*14.2*	*11.3*			
Total Iron Ore	mt	293.9	309.3	342.9	409.3	489.7	563.4	611.9	664.9	709.3	5.8	4.9	6.6
Chge YoY (%)		*0.5*	*5.3*	*10.9*	*19.4*	*19.6*	*15.1*	*8.6*	*8.6*	*6.7*			
Percentage Imports (%)		*23.8*	*29.8*	*32.5*	*36.2*	*40.8*	*43.2*	*43.7*	*45.9*	*47.9*			
Crude Steel													
Produced from Imported Ore	mt	44.1	58.1	70.2	93.4	125.9	153.5	168.3	192.2	213.9	12.9	18.7	17.7
Inc/(Dec) in Imported Ore	mt	14.7	22.3	19.2	36.7	51.7	43.7	23.5	37.9	34.4			
Crude Steel													
Produced from Domestic Ore	mt	63.0	68.8	82.4	92.9	102.9	113.5	122.4	127.7	131.3	6.5	5.5	6.0
Implied/Assumed Domestic Fe Grade (%)		*28.1*	*31.7*	*35.6*	*35.6*	*35.5*	*35.5*	*35.5*	*35.5*	*35.5*			
Assumed Fe Grade of Imported Iron Ore	*63%*												
BOF/OHF	mt	107.0	127.0	152.6	184.1	228.8	267.0	290.7	319.9	345.1	8.6	9.3	10.0
Ratio Ore/Steel		2.75	2.44	2.25	2.22	2.14	2.11	2.11	2.08	2.06			

BOF = Blast Oxygen Furnace; OHF = Oxygen Hearth Furnace; EAF = Electric Arc Furnace

e = Morgan Stanley Research estimates

Source: IISI, Company Data, Morgan Stanley Research.

Exhibit 34

Possible Seaborne Iron Ore Capacity/Production Additions (annualized rate) 2003-10e

		2003	2004	2005e	2006e	2007e	2008e	2009e	2010e	Vol. 2002	Vol. 2006e	Vol. 2010e	CAGR 02-06e %	CAGR 02-10e %
Australia														
Rio Tinto														
Hamersley	mt	5.9	8.0	20.6	37.0	41.6	45.0	46.0	46.9	70.0	107.0	116.9	11.2	6.6
Robe River/West Angelas	mt	8.6	15.1	22.2	25.5	27.7	27.7	27.7	27.7	35.3	60.8	63.0	14.6	7.5
Sub Total	mt	14.5	23.2	42.8	62.5	69.3	72.7	73.7	74.6	105.3	167.8	179.9	12.4	6.9
BHP Billiton														
Mt Newman	mt	-0.2	2.8	4.9	5.8	9.9	9.9	9.9	11.7					
Goldsworthy	mt	0.3	-0.3	-2.4	-2.5	-2.5	-2.5	-2.5	-7.2					
Billiton - Area C	mt	0.0	6.7	17.5	18.2	21.2	25.9	29.4	35.3					
Yandi	mt	7.1	9.9	15.0	21.5	25.6	28.3	31.3	34.4					
Jimblebar	mt		1.4	1.9	2.1	2.1	2.1	2.1	2.1					
Samarco	mt	4.2	4.3	4.7	4.7	4.7	8.7	12.7	12.7					
Sub Total		11.5	24.8	41.6	49.8	61.0	72.4	82.9	89.0	70.0	119.8	159.0	14.4	10.8
Portman	mt	0.5	0.7	1.2	2.2	2.2	2.2	2.2	2.2					
OneSteel	mt			0.0	1.0	2.0	2.0	2.0	2.0					
Mt Gibson	mt	-	1.0	2.5	2.5	2.5	2.5	2.5	2.5					
Hope Downs (Kumba)	mt	-	-	-	-	-	5.0	10.0	15.0					
FMG	mt						5.0	10.0	15.0					
Sub total - Australia	mt	26.4	49.7	88.1	118.0	137.0	161.9	183.4	200.3	175.3	293.3	375.6	13.7	10.0
Brazil														
CVRD														
Carajas N5	mt	-	14.0	14.0	24.0	29.0	29.0	44.0	44.0					
Brucutu	mt	-	-	6.5	15.0	24.0	24.0	24.0	24.0					
Fazendao	mt	-	-	-	14.0	14.0	14.0	14.0	14.0					
Fabrica Nova	mt	-	-	9.0	15.0	20.0	20.0	20.0	20.0					
Itabira	mt	-	-	-	3.0	3.0	3.0	3.0	3.0					
Gongo Socco	mt	-	3.5	3.5	3.5	3.5	3.5	3.5	3.5					
Andrade	mt	-	-	-	-	-	8.0	8.0	8.0					
Corrego do Meio	mt	-	-	-	-	-	-	-	-					
Corrego de Feijao	mt	-	-	-	-	-	-7.0	-7.0	-7.0					
Timbopea	mt	-	-	-	-	-	-6.0	-6.0	-6.0					
Joao Pereira	mt	-	-	-	-	-	-	-10.0	-10.0					
Sub Total (6)		0.0	17.5	33.0	74.5	93.5	88.5	93.5	93.5	138.0	212.5	231.5	11.4	6.7
MBR - Capao Xavier	mt	4.0	4.5	8.0	8.0	8.0	8.0	8.0	8.0	30.6	38.6	42.6		
CSN - Casa de Pedra	mt	-	1.8	1.8	9.8	25.8	25.8	25.8	25.8	13.0	38.8	64.6		
Sub total - Brazil	mt	4.0	23.8	42.8	92.3	127.3	122.3	127.3	127.3	181.6	289.9	417.2	12.4	11.0
Less Internal Consumption	mt	-	-	-	-6.0	-10.0	-17.5	-20.0	-20.0	-30.0	-36.0	-46.0		
Brazil for Export	mt	4.0	23.8	42.8	86.3	117.3	104.8	107.3	107.3	151.6	253.9	371.2	13.8	11.8
South Africa														
Kumba - Export	mt	1.0	1.5	2.0	5.0	10.5	16.5	18.5	18.5	21.0				
Assmang - Export	mt	-	0.5	1.5	1.5	1.5	1.5	1.5	1.5	4.5				
Sub total - Sth Africa	mt	1.0	2.0	3.5	6.5	12.0	18.0	20.0	20.0	25.5	32.0	45.5	5.8	7.5
Total	**mt**	**31.4**	**75.5**	**134.4**	**210.8**	**266.3**	**284.7**	**310.7**	**327.6**	**391.0**	**617.8**	**830.9**	**12.1**	**9.9**
Annual incremental increase	**mt**	**31.4**	**44.1**	**58.9**	**76.4**	**55.5**	**18.3**	**26.0**	**17.0**					

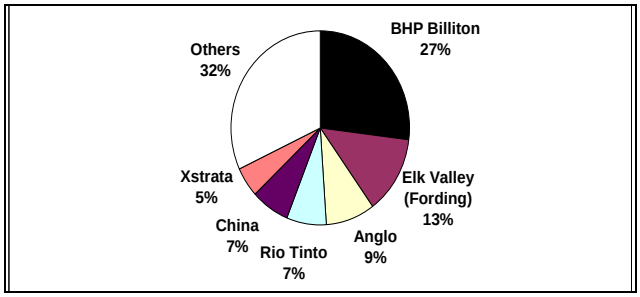
e = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research.

Seaborne Traded Coking Coal — Tight Industry Structure and Limited Supply

Exhibit 35

Coking Coal Seaborne Traded Market Share, 2004



Source: BHP Billiton

Tight supply for longer

We forecast coking coal to remain in short supply during 2005–08, and that prices will remain well above long-term trend. We expect that the major suppliers — BHP Billiton, Fording, Rio Tinto and Xstrata — will all benefit from the higher coking coal price environment. The tight supply environment has arisen as a result of continuing ramp-up of Chinese steel capacity that has seen Chinese coking coal exports decline to keep pace with domestic demand. We have increased our 2006–08 price projections, with the largest increase in JFY2006/07e from US$95 to US$125 per metric ton.

We have raised our long-term price from US$55/t to US$65/t owing to our expectation of a sustained deficit and higher development costs as mines become deeper. We note that BHPB's new developments include underground mines that are higher cost than open-cut and face higher development and operational risks.

Top five producers control 61% of the market

The top producers of coking coal are BHP Billiton with 27%, Fording 13%, Anglo American 9%, Rio Tinto 7%, and Xstrata 5% (Exhibit 35). On a regional basis, Australia accounted for 52% of the global seaborne traded coking coal production at 112 mt in 2003, followed by Canada at 24 mt (11%), the US at 20 mt (9%) and China at 13 mt (6%).

At times of high pricing and margins, new participants are typically attracted by the excess returns achieved by incumbent producers. In the case of coking coal, there is an exception. *This is due to the limited resource of high-quality coking coal that is required by integrated steel producers to maximise the efficiency of their blast furnaces at times of high steel pricing, and is clearly visible with the reduction of semi-soft consumption by Japanese steel mills.*

There have recently been reports of new mine expansions, but these are generally from established producers, and for our forecast period we anticipate a supply-side deficit, as we expect new production will not keep pace with steel industry demand. We therefore expect the industry to remain highly concentrated and margins to remain robust.

Limited supply due to scarce resource availability

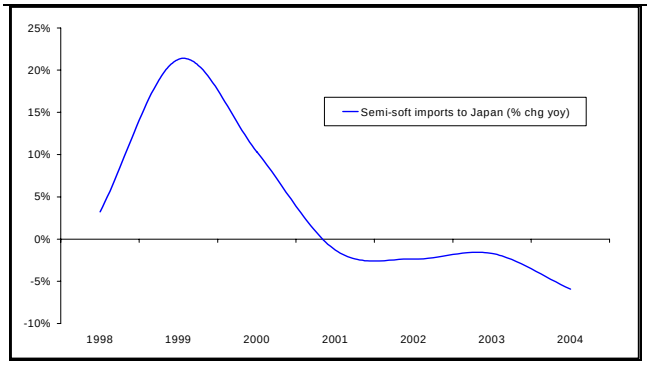
The outlook for coking producers is very bright, in our opinion. Despite a step change in hard coking pricing, with recent settlements quoted at US$125/t and higher, the number of new mine developments announced has been relatively low. We forecast global seaborne traded coking coal will rise to 249 mt by 2008 from 211 mt in 2003, an increase of 18% (CAGR of 3.4%). We forecast a supply-side deficit of 23 mt for 2005 (9% of the market), and a deficit of 20 mt for 2006, with the market not reaching balance until after 2008.

China is now a net importer

The key driver of our forecast supply deficit is a decline in net Chinese exports. In 2003, China was a net exporter of 10.5 mt of coking coal. For 2004, China became a net importer of 0.9 mt, consisting of 5.7 mt in exports and 6.6 mt in imports. Chinese exports of metallurgical coal were down 56% in 2004 from the previous year, and imports were up 153%. By 2007, we forecast China will be a net importer of 8.6 mt of hard coking coal.

Exhibit 36

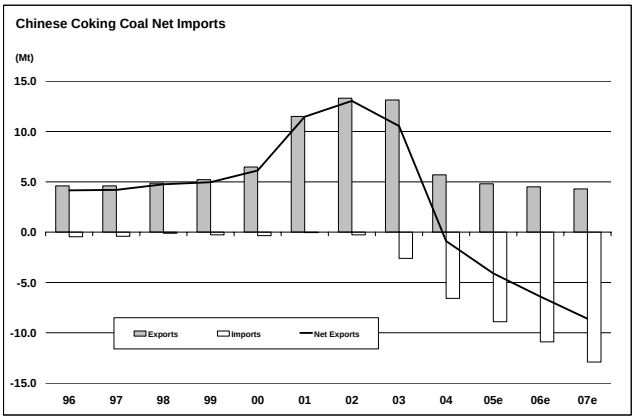
Japanese Semi-Soft Coal Imports: YoY % Change



Source: Tex Report, Morgan Stanley Research

Exhibit 37

Chinese Coking Coal Imports and Exports, 1996–2007e



e = Morgan Stanley Research estimates
Source: Barlow Jonker, Morgan Stanley Research

Demand for seaborne coking coal should remain strong

We forecast global demand for coking coal to increase at a 5.0% CAGR from 2003–08. We forecast a supply-side deficit to 2008, when we expect the market to return to balance. Risks to our forecast include further expansion of BOF and OHF steelmaking capacity in China and India, which could result in a deeper and longer supply-side deficit than expected.

Coking coal price settled at US$125/t up 110.9% YoY

The pricing outlook for coking coal appears robust with BMA (BHPB/Mitsubishi Alliance) settling a new record benchmark price of US$125/t (BHP Billiton nominal benchmark), representing a rise of 110.9% for JFY 2005–06e. However, we do acknowledge that individual steel producer contracts could either surpass or fall below our forecast, which represents an average. Similarly, individual producer average contract realised prices may be above or below the forecast owing to factors such as transport distances and existing customer relationships.

Price forecast to remain high

We expect the price of hard coking coal to remain very high over our forecast period and our price forecast is normalised in 2008 at US$65/t. Owing to tight industry supply/demand, exasperated by freight bottlenecks — particularly at Dalrymple Bay, the largest coking coal export terminal in Australia — we forecast at least a rollover of hard coking coal prices for JFY 2006/7.

Our steel analysts in Asia expect the most recent raw material input price settlements to be passed on in full, and in the case of the Japanese steel mills (JSMs), forecast margin expansion. Should the JSM's achieve margin expansion, we would see scope for the coking coal producers to seek an increase in pricing. Further out, in JFY 2007/8 we expect a reduction in pricing based on a slight softening of steel markets that should enable producers to marginally increase consumption of semi-soft coking coal and seek a reduction in prices for hard coal.

Exhibit 38

Coking Coal Contract Price

Period	Contract Price US$/t	YoY Price Change (US$/t)	YoY Price Change (US$/t) %
JFY 2000/01	39.75	-2.25	-5.4
JFY 2001/02	42.75	3.00	7.5
JFY 2002/03	48.09	5.34	12.5
JFY 2003/04	46.30	-1.79	-3.7
JFY 2004/05	59.26	12.96	28.0
JFY 2005/06e	**125.00**	**65.74**	**110.9**
JFY 2006/07e	125.00	0.00	0.0
JFY 2007/08e	100.00	-25.00	-20.0
Long Term	55.00	-45.00	-45.0

e = Morgan Stanley Research estimates
Source: Company data, Tex Report, Barlow Jonker, Morgan Stanley Research

Exhibit 39

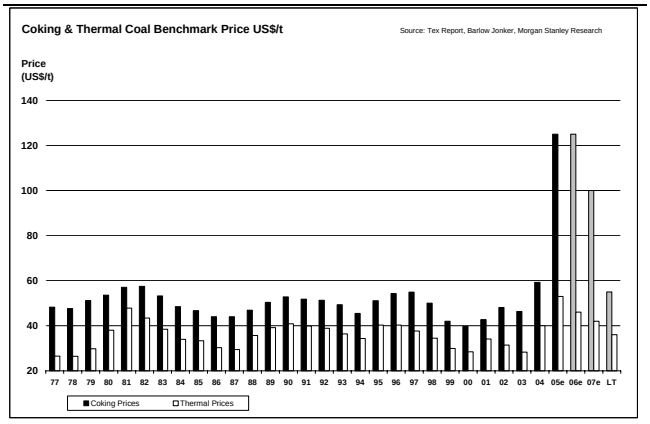
Coking Coal Price Forecast Revisions

Period	Revised US$/t	Previous US$/t	% Change
JFY 2005/06	125.00	125.00	0
JFY 2006/07	125.00	95.00	32
JFY 2007/08	100.00	85.00	18
Long Term	65.00	55.00	18

Source: Morgan Stanley Research estimates

Exhibit 40

Coking and Thermal Coal Price



e = Morgan Stanley Research estimates
Source: Tex report, Barlow Jonker, Morgan Stanley Research

Exhibit 41

Global Seaborne Traded Coking Coal Supply/Demand, 2000–08e

(mt)	2000	2001	2002	2003	2004e	2005e	2006e	2007e	2008e	Change (mt) 2003–08e	% Chg '03–08e	CAGR '03–08e %
Coking Coal Exports												
Australia	100	106	104	112	120	129	137	145	155	44	39%	6.8
% change YoY		*7*	*-2*	*7*	*8*	*7*	*6*	*6*	*7*			
United States	30	23	20	20	20	20	20	20	20			
% change YoY		*-22*	*-16*	*3*	*0*	*0*	*0*	*0*	*0*			
South Africa	3	3	2	3	3	3	3	3	3			
% change YoY		*-9*	*-32*	*48*	*0*	*0*	*0*	*0*	*0*			
Indonesia	6	5	5	7	7	7	7	7	7			
% change YoY		*-22*	*-2*	*44*	*0*	*0*	*0*	*0*	*0*			
Canada	28	27	26	24	26	30	34	35	36	12	49	8.3
% change YoY		*-3*	*-5*	*-7*	*8*	*13*	*16*	*3*	*1*			
Poland	5	4	4	3	3	3	3	3	3			
% change YoY		*-28*	*-8*	*-26*	*0*	*0*	*0*	*0*	*0*			
China	7	12	13	13	-1	-4	-6	-9	-11			
% change YoY		*67*	*16*	*-2*	*-61*	*-59*	*-95*	*NA*	*NA*			
Colombia	1	1	1	1	1	1	1	1	1			
% change YoY		*17*	*0*	*14*	*0*	*0*	*0*	*0*	*0*			
Russia	8	11	15	15	15	15	16	19	22	7	43	7.4
% change YoY		*29*	*37*	*5*	*0*	*0*	*3*	*22*	*13*			
Other	15	12	13	14	14	14	14	14	14			
% change YoY		*-19*	*5*	*9*	*0*	*0*	*0*	*0*	*0*			
Total Coking Coal Exports	203	203	201	211	207	216	227	238	249	38	18%	3.4%
BOF & OHF Crude Steel Prod'n												
European Union	127	121	121	126	133	136	137	136	138	12	10	1.8
% change YoY		*-5*	*0*	*5*	*5*	*2*	*1*	*-1*	*2*			
Former USSR	87	88	89	94	97	89	91	92	92	-2	-2	-0.3
% change YoY		*1*	*1*	*6*	*4*	*-8*	*2*	*1*	*0*			
NAFTA	69	61	59	60	66	68	70	71	71	10	17	3.2
% change YoY		*-11*	*-3*	*2*	*9*	*4*	*2*	*1*	*0*			
Central and South America	26	25	27	29	31	32	33	32	33	5	16	3.1
% change YoY		*-4*	*10*	*6*	*6*	*4*	*3*	*-2*	*3*			
Asia Pacific	220	240	272	327	371	409	431	454	480	153	47	8.0
% change YoY		*9*	*13*	*20*	*13*	*10*	*5*	*5*	*6*			
Africa, Middle East	12	13	13	14	15	15	16	16	17	2	16	3.1
% change YoY		*8*	*7*	*8*	*3*	*3*	*3*	*3*	*3*			
Total BOF/OHF Crude Steel Prod'n	540	547	581	651	712	749	777	802	832	181	28	5.0
% change YoY		*1*	*6*	*12*	*10*	*5*	*4*	*3*	*4*			
Coking Coal Imports												
Europe	53	51	55	52	55	56	57	57	57	5	10	1.8
% change YoY		*-4*	*9*	*-5*	*5*	*2*	*1*	*-1*	*2*			
Former USSR	13	12	10	8	9	8	8	8	8	0	-2	-0.3
% change YoY		*-4*	*-17*	*-19*	*4*	*-8*	*2*	*1*	*0*			
NAFTA	7	8	8	6	7	7	7	7	7	1	17	3.2
% change YoY		*17*	*-3*	*-18*	*9*	*4*	*2*	*1*	*0*			
Central & South America	17	16	15	17	18	19	19	19	20	3	16	3.1
% change YoY		*-1*	*-11*	*16*	*6*	*4*	*3*	*-2*	*3*			
Asia	116	116	120	125	137	144	149	154	160	35	28	5.0
% change YoY		*-1*	*3*	*4*	*10*	*5*	*4*	*3*	*4*			
Africa, Middle East, Other	11	8	12	6	6	6	6	7	7	1	16%	3.1%
% change YoY		-30	45	-50	3	3	3	3	3			
Total Coking Coal Imports	**208**	**203**	**211**	**213**	**231**	**240**	**247**	**252**	**259**	**47**	**22**	**4.0**
% change YoY		***-2***	***4***	***1***	***9***	***4***	***3***	***2***	***3***			
Supply Surplus/(Deficit)	**(6)**	**0**	**(10)**	**(2)**	**(24)**	**(23)**	**(20)**	**(14)**	**(10)**			

e = Morgan Stanley Research estimates

Source: Barlow Jonker, Tex Report, AME, Company data, Morgan Stanley Research

Nickel — A Forced Balance

We are maintaining our 2005 LME cash nickel price forecast at US$7.00 per pound and increasing our 2006 and 2007 forecasts to US$6.50 and US$5.25, respectively. These increases reflect our expectation that underlying demand will exceed production growth until at least mid-2007. We believe the nickel market will continue to be forced into balance via high prices and demand destruction owing to the lack of an inventory cushion and limited capacity growth over the next year or two.

A tight supply/demand balance continues to be the main highlight of the nickel market. In 2004, the nickel market was notable for its extended period of high prices. Cash LME nickel averaged US$6.30 per pound for the year as underlying demand that exceeded supply was kept in check with price-induced demand destruction, a surge of scrap flow and de-stocking. Consumption only grew by around 1% in 2004, lagging OECD and global IP growth of 4.1% and 5.8%, respectively, owing to limited supply. The decline of the US dollar also supported price strength.

We believe market fundamentals require a nickel price well above the current consensus. The LME cash nickel price stands at US$7.41 per pound and has averaged US$6.98 year to date. The consensus view for nickel in 2005 is strong, but flat versus 2004, averaging US$6.29 per pound. Based on our global GDP growth forecast of 3.7%, we would typically estimate consumption growth in the range of 7%, and possibly higher owing to the de-stocking that occurred in 2004. However, our production growth forecast of 6.1% and current low inventory suggests sustained high prices will be required to rein in demand. In our view, the near-term inability of major nickel suppliers (Inco and Norilsk) to respond to high prices is leading to renewed fund interest in the metal. Combined with recovering demand from non-stainless nickel, end markets and a tight scrap supply, we look for the nickel price to be higher than many expect.

Exhibit 42

Nickel LME Cash Price Forecasts, 2005–08

	Old US$/lb	New US$/lb	Chg (%)	Consensus US$/lb	Difference (%)
1Q-05	7.20	6.98	-3	6.70	3
2Q-05e	7.00	7.15	2	6.85	5
3Q-05e	7.00	7.10	1	6.40	11
4Q-05e	6.80	6.77	0	6.50	4
1Q-06e	6.00	6.75	13	NA	
2Q-06e	6.00	6.50	8	NA	
3Q-06e	6.00	6.50	8	NA	
4Q-06e	6.00	6.25	4	NA	
2005e	7.00	7.00	0	6.29	11
2006e	6.00	6.50	8	6.03	8
2007e	4.50	5.25	17	NA	
2008, Mid-cycle	3.50	3.50	0	NA	

NM - Not Meaningful, NA - Not Available
Source: Consensus First Call, Morgan Stanley Research estimates

Exhibit 43

Nickel Supply Demand Summary

'000 t	2004	2005e	2006e	2007e	2008e
Total World Prod'n	**1,248**	**1,324**	**1,390**	**1,500**	**1,560**
World ex China	1,189	1,261	1,322	1,430	1,490
Total World Demand	**1,262**	**1,326**	**1,389**	**1,479**	**1,538**
World ex China	1,116	1,166	1,209	1,274	1,308
Surplus/(Deficit)	(14)	(2)	1	21	22
Total Stocks	172	170	171	192	214
Consumption Ratio (wks)	7.1	6.7	6.4	6.8	7.2
Stocks as % of Prod'n	14%	13%	12%	13%	14%
'000t Change					
Production	48	77	66	110	60
Consumption	10	64	63	90	59
Surplus/(Deficit)	(3)	(2)	1	21	22
Price (US$ per pound)	6.30	7.00	6.50	5.25	3.50
Price (US$ per tonne)	13,889	15,432	14,330	11,574	7,716

Source: Morgan Stanley Research estimates

Prices should stay higher for longer. We are maintaining our 2005 forecast for cash nickel at US$7.00. The case for substantially lower pricing in 2006 and 2007 is based on additional supply contribution from new projects. Some price relief will come as Inco's Goro and BHP's Ravensthorpe come on-stream from which we expect initial production in late-2007. However, we believe that underlying demand will be sufficient to keep inventories near current levels through 2006. We are forecasting a balanced market in 2005 and 2006 on production growth of 6.1% and 5.0% and consumption growth of 5.1% and 4.8%, respectively. Without inventory cover, we believe this situation will result in high prices. We have increased our price forecasts for 2006, from US$6.00 to US$6.50, and 2007 from US$4.50 to US$5.25.

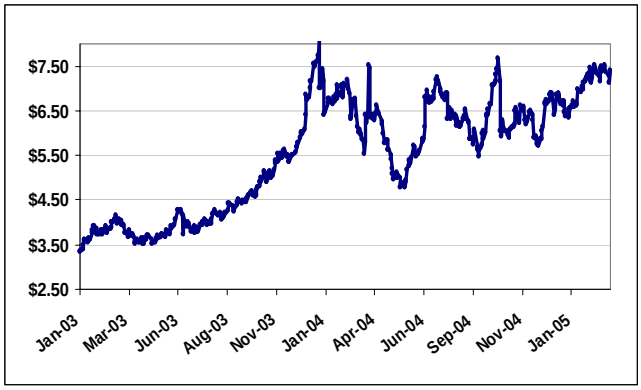
Forecasting demand from China is important, but difficult. A highlight of commodity forecasts in recent years has been the continual underestimation of consumption growth in China. Demand for stainless steel in China has risen at an average annual rate of 25% in recent years. We believe the demand for building cladding, auto and transportation applications, kitchen appliances and machinery manufacture will see demand remain strong. We are forecasting Chinese nickel consumption growth of 9.9% in 2005, 12.5% in 2006 and 13.9% in 2007.

The variables that will determine Chinese nickel consumption over our forecast period continue to grow. Approximately 6.7 million tonnes of new stainless melt capacity is planned for China over 2005–08e. At present, austenitic stainless accounts for 90% of total Chinese consumption while ferritic stainless only accounts for 10%. It is unclear what the split of stainless steel grades produced will be from new and existing stainless capacity. Baosteel is pursuing development of low-nickel and ferritic stainless steel products, in response to nickel supply tightness for use in applications normally reserved for 300-series stainless grades. While the production cost of ferritic stainless steel is relatively low, it is a more complicated process technically. We believe some growth in Chinese nickel consumption will be offset by Japanese steelmakers switching to ferretic grades as the Japanese attempt to leverage their technical advantages relative to the Chinese. The Chinese government recently reduced import duties on refined nickel from 3% to 1%, which should bolster import demand.

'Relief valves' will be less effective in 2005. The nickel market was relatively efficient in 2004 responding to systemic tight inventory. High primary prices induced a surge in scrap flow and increased demand for low or no nickel stainless grades. We believe the scrap supply will tighten in 2005 as the increased supply reflected scrap dealer de-stocking rather than a sustainable increase in supply. Series-200 stainless (containing 1% to 5% nickel) continued to gain market share in China last year, growing to 22% from 12% in 2003, according to CRU. While we believe low-nickel stainless will continue to carve out a niche, problems in certain applications and scrap contamination will restrict growth. Some of this will be offset by switching to ferritics, but this should be limited by poorer deep-drawing and weld-ability characteristics of the ferritics grades.

Exhibit 44

LME Cash Nickel Price (US$ per pound)



Source: LME, Morgan Stanley Research

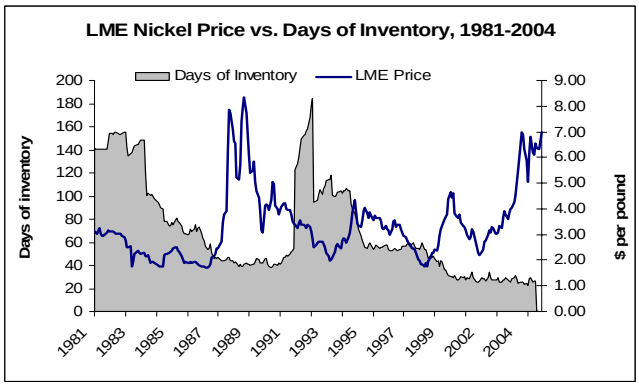
Imported 200-series stainless steel products still available in China. In response to problems associated with Series-200 stainless in China, some state-owned steel producers in November 2004 submitted a proposal to relevant authorities to stop imports of 200 series products. According to Antaike, imported 200-series stainless steel products are still on sale in China.

Non-stainless nickel demand poised to grow. We expect strong build rates in the aircraft sector to increase consumption of high-nickel alloys. In addition, we expect higher consumption of these alloys to be driven by a replacement cycle in the industrial gas turbine sectors. This type of demand should be relatively price inelastic, and exacerbate an already tight supply/demand balance.

In the face of this demand outlook, the production side of the industry continues to run at capacity. Inco's Sudbury maintenance outage (scheduled to begin on May 29, 2005) and a flat production forecast from Norilsk should keep the market tight. This increases the likelihood of extremely tight inventories through the first half of 2005, and leaves the market particularly susceptible to supply disruption. Sumitomo's Coral Bay pressure acid leach project is reported to be off to a poor start. In addition, Inco's collective bargaining agreement at its Manitoba operations expires in September of this year. Over the near-term, we believe this will result in nickel prices remaining strong while continuing to demonstrate volatility.

Exhibit 45

LME Nickel Inventory Versus Price 1981-Present (tonnes)



Source: LME, Morgan Stanley Research

The weak dollar's contribution to nickel price strength could ease. While the major driving force in nickel price strength has been a tight supply demand balance, currency has played a role as well. Although the potential for further US dollar weakness exists, our currency analysts' forecasts for 1.35 and 1.31 EUR/USD in 2005 and 2006, respectively, imply that much of this impact is behind us. Similar forecasts for key nickel market commodities reinforce this outlook.

Exhibit 46

Forecast Nickel Mine Production Changes ('000 Tonnes Adjusted for Mined Ore Yield) (2004–08)

Mine Name	Operator	2004	2005	2006	2007	2008
Total Africa		67.5	70.3	72.1	77.5	76.0
Total South America		125.0	132.4	125.5	132.4	127.9
Canada						
Inco Manitoba	Inco	34.3	37.2	31.8	29.5	29.5
Inco Ontario	Inco	98.7	79.4	79.4	72.6	79.4
Voisey's Bay	Inco	0.0	0.0	49.9	61.3	59.0
Total North America		187.4	178.3	224.3	233.9	236.8
Indonesia						
Inco Soroako	PT Int. Nickel (Inco)	65.8	72.6	74.9	77.1	83.9
Total		109.9	123.2	128.8	137.8	143.5
Total Philippines		22.8	24.7	25.8	29.1	29.4
Total Asia		132.7	147.9	154.5	166.9	172.9
Total Europe		20.8	28.0	29.4	33.8	34.8
Australia						
Kambalda	WMC Resources	22.9	22.9	22.4	23.8	23.3
Leinster Nickel	WMC Resources	36.4	35.2	36.0	34.7	34.1
Mt Keith	WMC Resources	35.2	35.6	34.8	36.9	36.2
Ravensthorpe	BHPBilliton	0.0	0.0	0.0	10.4	25.6
Total Australia		192.5	215.8	226.9	252.7	266.7
New Caledonia						
Goro	Inco	0.0	0.0	0.0	4.1	40.8
Total New Caledonia		102.7	118.5	119.4	138.0	174.8
Total Oceania		295.3	334.4	346.4	390.7	441.5
China						
China Various	Various	4.1	6.7	12.3	13.0	12.8
Jinchuan	Jinchuan Non-F. Metals	54.7	56.1	54.8	58.2	57.1
Total China		58.7	62.8	67.1	71.2	69.8
Total Cuba		73.1	78.4	78.5	96.3	103.8
Total Eastern Europe		22.7	24.4	23.8	25.3	24.8
Russia						
Norilsk	Norilsk Nickel	128.5	131.0	132.0	132.0	132.0
Pechenganickel	Kola Mining	116.3	112.0	113.0	113.0	113.0
Total Russia		264.3	267.1	268.5	272.1	271.6
Total Planned Production		**1,247.7**	**1,324.0**	**1,390.0**	**1,500.0**	**1,560.0**

Source; Morgan Stanley Research Estimates, CRU.

Exhibit 47

Nickel Supply Demand Model (2004–08)

'000 t	2004	2005e	2006e	2007e	2008e	CAGR (%)
PRODUCTION						
North America	187	178	224	234	237	
Change YoY %	*14.3*	*-4.8*	*25.7*	*4.3*	*1.3*	*2.8*
Latin America	198	211	204	229	232	
Change YoY %	*2.1*	*6.5*	*-3.3*	*12.1*	*1.3*	*4.0*
Europe	21	28	29	34	35	
Change YoY %	*-25.6*	*34.4*	*4.8*	*15.0*	*3.2*	*6.8*
Russia	264	266	269	272	272	
Change YoY %	*-0.2*	*0.8*	*0.8*	*1.3*	*-0.2*	*1.8*
Other East	23	24	24	25	25	
Change YoY %	*126.8*	*7.5*	*-2.4*	*6.1*	*-1.9*	*19.8*
China	59	63	67	71	70	
Change YoY %	*6.8*	*6.9*	*6.8*	*6.1*	*-1.9*	*4.6*
Indonesia	110	123	129	138	143	
Change YoY %	*-8.4*	*12.2*	*4.4*	*7.0*	*4.1*	*3.0*
Phillipines	23	25	26	29	29	
Change YoY %	*-12.1*	*8.2*	*4.3*	*12.9*	*1.1*	*1.2*
Africa	68	70	72	77	76	
Change YoY %	*-10.0*	*4.3*	*2.4*	*7.5*	*-1.9*	*1.6*
Australia	193	216	227	253	267	
Change YoY %	*-3.2*	*12.2*	*5.1*	*11.3*	*5.5*	*5.0*
New Caledonia	103	119	119	138	175	
Change YoY %	*-7.4*	*15.5*	*0.7*	*15.6*	*26.7*	*5.8*
Total World Finished Production	**1,248**	**1,324**	**1,390**	**1,500**	**1,560**	**4.4**
Change YoY %	*4.0*	*6.1*	*5.0*	*7.9*	*4.0*	
World ex-China	**1,189**	**1,261**	**1,323**	**1,429**	**1,490**	**4.4**
Change YoY %	*3.8*	*6.1*	*4.9*	*8.0*	*4.3*	
CONSUMPTION						
North America	144	145	145	149	154	
Change YoY %	*0.7*	*0.7*	*0.0*	*2.8*	*3.4*	*1.0*
South & Central America	32	37	43	45	46	
Change YoY %	*3.2*	*15.6*	*16.2*	*4.7*	*2.2*	*7.3*
Europe	443	462	481	510	525	
Change YoY %	*-0.4*	*4.3*	*4.1*	*6.0*	*2.9*	*2.8*
CIS	30	32	33	33	34	
Change YoY %	*-5.3*	*5.6*	*3.1*	*0.0*	*3.0*	*0.4*
China	146	160	180	205	230	
Change YoY %	*7.9*	*9.9*	*12.5*	*13.9*	*12.2*	*14.2*
Japan	181	185	190	200	205	
Change YoY %	*0.6*	*2.2*	*2.7*	*5.3*	*2.5*	*3.1*
Other Asia	240	250	260	280	285	
Change YoY %	*0.6*	*4.4*	*4.0*	*7.7*	*1.8*	*5.7*
Australasia	2	2	2	2	2	
Change YoY %	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Africa	44	53	55	55	57	
Change YoY %	*-3.5*	*19.4*	*3.8*	*0.0*	*3.6*	*9.1*
Total World	**1,262**	**1,326**	**1,389**	**1,479**	**1,538**	**4.6**
Change YoY %	*0.8*	*5.1*	*4.8*	*6.5*	*4.0*	
World ex-China	**1,116**	**1,166**	**1,209**	**1,274**	**1,308**	**3.5**
Change YoY %	*-0.1*	*4.4*	*3.7*	*5.4*	*2.7*	
Surplus/(Deficit)	**(14)**	**(2)**	**1**	**21**	**22**	

Source; Morgan Stanley Research Estimates, CRU.

Aluminium — Deficit Moves into Second Year

Raising price forecasts based on strong consumption growth

We are increasing our price forecast for aluminium for 2005-07 owing to greater than expected global consumption growth last year, a modest increase in our 2005 supply deficit estimate and the continued tight alumina market. Aluminium fundamentals are being driven by the tight alumina market and strong Chinese consumption growth. We look for the tight alumina market to begin to ease late 2006 and this to translate into a meaningful surplus of aluminium in 2007.

We believe the aluminium business model is the least attractive of the steel and nonferrous segments because of:

- the rapid growth in Chinese smelting capacity;
- the weakness of the dollar;
- capacity creep at the various stages of aluminium production; and
- a lack of by-product credits.

Consumption growth outpaced our projections in 2004. We believe global aluminium consumption grew by an impressive 9.3% in 2004 versus our final projection of 8.8%. This was driven by strong growth in the US and Asia, particularly China. Chinese consumption continues to exceed expectations. In our December discussion, *we projected 2004 Chinese consumption growth of 16.1%, but it came in at 16.8%.* This seems to be a repeating pattern, with not only us, but most market observers projecting a decline in Chinese aluminium consumption to trend line early in the year, or 10-12%, but it has remained in the mid- to high teens.

We look for global GDP growth to slow this year and project a slowdown in global aluminium consumption growth to 5.0%, followed by 3.8% in 2006. Our economists look for global GDP growth to slow to 3.8% this year from 4.8% last year, and for the Industrial World's GDP growth to slow to 2.5% from 3.2% last year.

Aluminium production limited by alumina growth. Primary aluminium production growth has been limited by alumina growth and availability. Chinese aluminium smelter growth has surprised the aluminium industry on the upside in the past few years. The alumina industry is more concentrated than the smelting segment, and alumina capacity is generally not built unless a company either has an attractive world class bauxite deposit or a long-term bauxite contract. We expect alumina availability to be tight for the next 18 months, but move into a meaningful surplus in 2007. We project aluminium smelter capacity growth at 4.8% this year and next. We project production growth at 4.7% in 2005 and 4.9% in 2006 following 6.5% growth in 2004.

Production growth in 2004 was driven by a sharp increase in Chinese production, partially offset by a decline in production from North America — owing in part to a strike at Alcoa's Becancour operation. African production growth also contributed to the sharp increase in production as the 269,000 tonne increase in production from the Mozal and Hillside smelters followed the 4Q03 completion of expansions and the November 2003 upgrade of the Mag Hammadi smelter. In addition, a number of CIS smelters managed to achieve efficiency gains as part of systematic upgrade programmes, which led to growth of 170,000 tons.

Output in North America fell to its lowest level since 1987 as a result of increases in most input costs. Efforts to control labour costs led to a four-month strike at Becancour. Ormet closed Hannibal to sell alumina, which lead to a tense relationship between labour and management and the closure of the entire smelter.

Idle Chinese smelting capacity declining. In mid-2004 China had approximately 1.0 million tons of recently completed aluminium smelting capacity that had not been activated because of tight power availability and a lack of alumina. Around 200,000 tons of this capacity was activated in the fourth quarter of last year, leaving 800,000 tons idle at the end of the year. We estimate that 400,000 tons of this idle capacity will be activated during 2005, leaving another 400,000 tons idle by the end of the year.

Global aluminium smelting capacity operated at approximately 89.4% in 2004 and we put it at 89.3% this year. We believe it will rise to 91.6% in 2007. We estimate that 1.0-1.5 million tons of capacity or 2.9-4.3% of the total is off-line because of a lack of alumina or power. Approximately half of the idle smelting capacity is in the US, primarily the Northwest, and is idle because of a lack of alumina and the high cost or unavailability of power. In addition, these are older marginal smelters that in many cases are owned by companies that have gone through bankruptcy. We estimate idle smelting capacity at 3.3 million tonnes globally.

We expect supply deficit to continue for a second year. We project a supply deficit of 362,000 tons in 2005 following the 261,000 ton deficit in 2004, as alumina availability limits production. We believe the tight alumina market will begin to ease in late 2006, and forecast a 800,000 ton surplus. We believe aluminium will move into balance in 2006 as alumina moves into a modest surplus. We look for aluminium supply/demand to move into a meaningful surplus in 2007 as idle capacity is restarted with the surplus running at 292,000 tons. Spot alumina is selling for approximately US$450 a ton, which is an indication of how tight it is at present.

Chinese impose export tax. Chinese aluminium exports surged during late 2004 in response to the threat of the removal of the 8% VAT rebate for primary aluminium exports and the imposition of a 5% tax on primary exports starting January 1, 2005. This resulted in a sharp increase in fourth quarter aluminium exports to 347,000 tons, with the whole year up 71% to net exports of 597,000 tons.

It is not clear what impact this will have on China. We believe it will limit exports, as it will strain marginal Chinese smelters. We believe it may force some older high-cost smelters to close with the alumina and power going to the new lower-cost more power-efficient smelters. We believe China closed most of its Soderberg smelting capacity last year.

The oversupply in China's refined market was due to the existing tariff structure, designed to protect the domestic industry and allow it to compete on an equal footing with international producers. Unfortunately, such distortions have promoted the development of Chinese smelting capacity in an unsustainable manner.

The Chinese authorities have been trying to reduce the incentive to export aluminium. However, while the latest traded data shows a considerable drop in net exports in the first two months of 2005, the incentive to export remains. The Chinese authorities have issued statements saying that it may continue to strengthen its efforts to reduce aluminium (electricity) exports. **We understand from industry sources (Antaike) that the government may introduce an export tax of up to 20%.**

Aluminium supply/demand balance. Due to exceptionally strong demand last year (9.3% global consumption growth), we estimate the global aluminium market ran a 261,000 metric ton supply deficit. So far this year, inventory has continued to decline, with terminal market inventory off 115,000 tons. We estimate global production will rise 4.7% to 31.2 million tons in 2005, and consumption to rise 5.0% to 31.6 million tons, with the market in a 362,000 ton deficit. We look for this to turn into a modest deficit of 12,000 tons in 2006 and 292,000 ton surplus in 2007.

Inventory down again this year. Exchange inventory is off 115,000 tons so far this year, following an 875,000 ton decline last year. We believe the exchange inventory decline last year overstated the actual inventory decline, as we believe one or more major private commodity houses holds 400,000-600,000 tons of aluminium inventory outside of the warehouse system, so it does not show up in the reported numbers.

Exhibit 48

Aluminium Price Forecasts (US$ per pound, LME Cash)

	Morgan Stanley			Consensus	
Period	Old	New	% Ch.	Cons.	% Diff.
4Q04	0.83	0.83	0	0.83	0
2004	0.78	0.78	0	0.78	0
1Q05	0.82	0.86	4	0.85	-1
2Q05e	0.82	0.86	5	0.88	2
3Q05e	0.82	0.84	2	0.86	2
4Q05e	0.81	0.82	1	0.91	11
2005e	0.82	0.85	3	0.85	0
2006e	0.77	0.80	4	0.83	4
2007e	0.74	0.75	1	0.77	3
2008e (mid-cycle)	0.70	0.70	0	NA	NA

Source: Datastream, Morgan Stanley Research estimates

Increase in price forecasts. We are increasing our price forecasts for 2005-07 (Exhibit 48). Demand for aluminium has exceeded production owing to higher than expected demand from China and production constraints caused by a shortage of alumina. The aluminium price has exceeded our previous forecast, running at US$0.86/pound during the first quarter and is currently at US$0.88/pound. We are increasing our forecasts for 2005 from US$0.82 to US$0.85 and 2006 from US$0.77 to US$0.80. However, we see prices normalising at US$0.70 in 2008 — largely as a result of our expectation of an emerging supply surplus in alumina production.

Exhibit 49

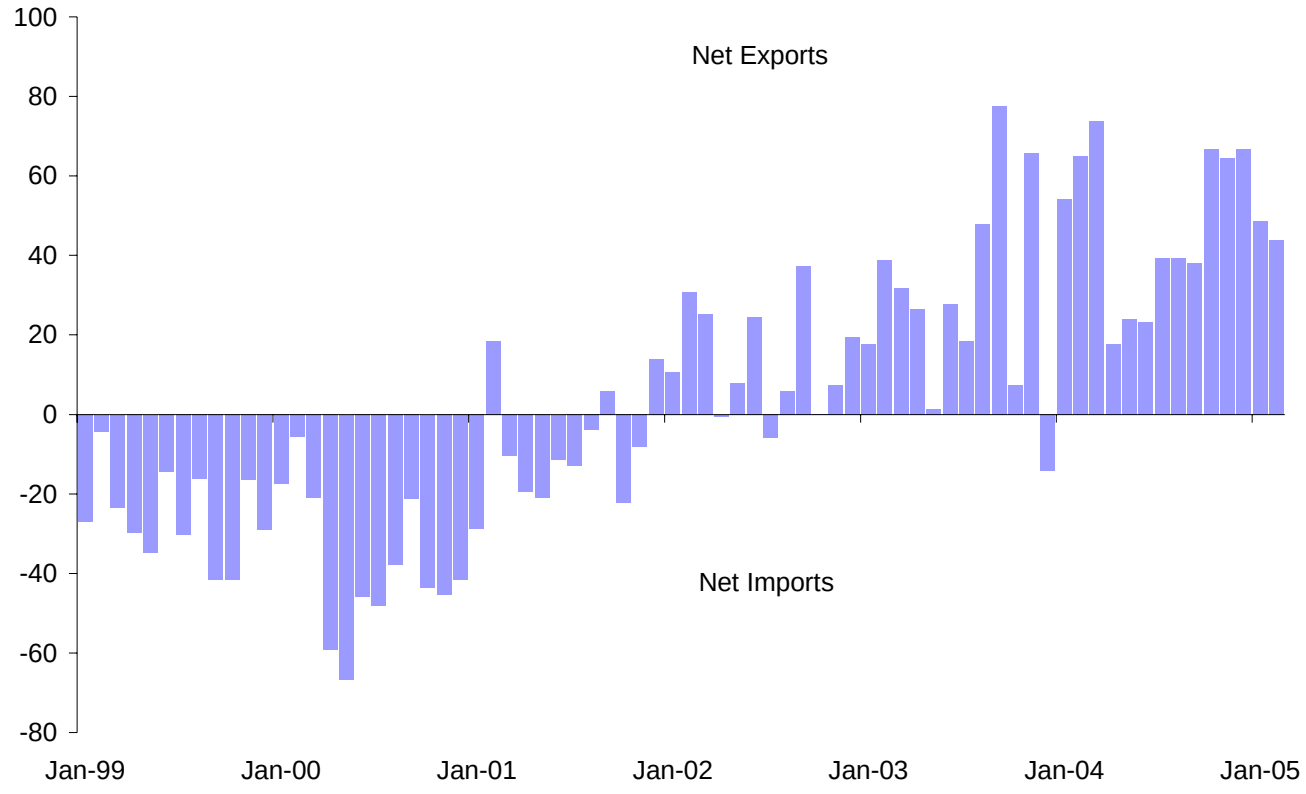
Change in Chinese Trade Policy

	2001	2002	2003	2004	2005e
Import Tariff (%)					
Alumina	18	12	10	8	8
Aluminium	9	5	5	5	5
Export Rebate/Tax (%)					
Aluminium	15	15	15	8	-5

Source: CEIC, Morgan Stanley Research

Exhibit 50

Chinese Net Aluminium Import/Exports



Source: Antaike, Morgan Stanley Research

Exhibit 51

Aluminium Supply/Demand

'000 t	2003	2004	2005e	2006e	2007e	2008e
Production						
North America	5,514	5,122	5,473	5,738	5,882	5,894
Latin America	2,257	2,358	2,389	2,617	2,853	2,977
Western Europe	4,416	4,650	4,689	4,702	4,759	4,764
Eastern Europe	411	474	473	474	473	477
CIS	3,932	4,091	4,159	4,258	4,508	4,835
China	5,517	6,576	7,257	7,837	8,412	8,789
India	1,007	1,113	1,150	1,272	1,456	1,564
Middle East	1,328	1,500	1,706	1,878	2,080	2,370
Australasia	2,198	2,244	2,251	2,279	2,289	2,294
Africa	1,428	1,709	1,748	1,784	1,918	2,018
Total Potential Production	28,008	29,837	31,245	32,789	34,580	35,932
Less Disruption Allowance	0	0	-50	-50	-50	-50
Less Other Adjustments	0	0	0	0	0	0
Total World Production	28,008	29,837	31,245	32,789	34,580	35,932
World ex-China	22,491	23,261	23,988	24,952	26,168	27,143
Consumption						
North America	6,465	7,176	7,343	7,433	7,439	7,615
of which US	5,652	6,316	6,467	6,541	6,510	6,650
N America ex-US	813	860	876	892	929	965
South & Central America	941	1,054	1,100	1,132	1,185	1,200
Europe	7,156	7,420	7,597	7,673	7,827	7,983
of which Western Europe	6,422	6,580	6,696	6,817	6,967	7,108
of which Eastern Europe	734	840	901	856	860	875
CIS	735	755	787	827	897	969
Asia	11,497	12,899	13,951	14,885	16,057	17,256
of which China	5,150	6,014	6,826	7,509	8,410	9,335
of which Japan	2,381	2,478	2,492	2,511	2,515	2,532
Asia ex-Jap/China	3,966	4,407	4,633	4,865	5,132	5,389
Australasia	384	399	410	416	431	440
Africa	361	395	419	435	452	481
Total World	27,539	30,098	31,607	32,801	34,288	35,944
World ex-China	22,389	24,084	24,781	25,292	25,878	26,609
Surplus/(deficit)	469	(261)	(362)	(12)	292	(12)
Total Stocks	3,565	3,304	2,942	2,930	3,222	3,210
Stock consumption ratio (weeks)	6.7	5.7	4.8	4.6	4.9	4.6
China deficit	367.0	562.0	431.0	328.0	2.0	(546.0)
% *Change*						
Total World Prodn.	6.8%	6.5%	4.7%	4.9%	5.5%	3.9%
Total World Consumption	8.8%	9.3%	5.0%	3.8%	4.5%	4.8%
Aluminium Price US$/lb	0.65	0.78	0.85	0.80	0.75	0.70
Aluminium Price US$/t	1,433	1,720	1,874	1,764	1,653	1,543

e = Morgan Stanley Research estimates

Source: CRU, Brookhunt, Morgan Stanley Research

Exhibit 52

Estimates/Changes to World Capacity (2003–09e)

('000 tonnes) Location	Plant/Operator	Expansion Type 1	Capacity 2003	2004	2005e	2006e	2007e	2008e	2009e	Change 2004-09e (%)
USA	Wenatchee/Alcoa	Closure	228	-46	0	0	0	0	0	-46
Canada	Alouette	Brown	245	0	202	103	0	0	0	305
	Arvida/Alcan	Closure	253	-56	-34	0	0	0	0	-90
Mexico	Veracruz	Closure	66	-50	-16	0	0	0	0	-66
	Various	Closure	62	-12	0	-50	0	0	0	-62
Iceland	Fjardaal/Alcoa	Green	0	0	0	0	161	161	0	322
	Nordural/Nordural	Brown	90	0	0	84	38	0	0	122
Netherlands	Vlissingen	Brown	204	44	0	0	0	0	0	44
Norway	Aardal/Hydro	Creep/closure	214	0	6	-10	-38	0	0	-42
	Hoyanger/Hydro	Creep/closure	74	3	3	-5	-21	0	0	-20
	Karmoy/Hydro	Closure	270	0	0	0	0	-61	-61	-122
	Sunndal/Hydro	Brown	231	75	54	-	-	-	-	129
Other W. Europe	Various	Creep/closures		16	9	0	-75	-125	-50	-225
Bahrain	Alba/Alba	Brown/creep	525	11	219	100	145	167	0	642
Dubai	Dubal/Dubal	Brown/creep	559	116	48	38	0	11	12	225
Iran	Bandar Abbas/State	Green	55	55	0	0	83	27	0	165
Oman	Sohar/OOC	Green	0	0	0	0	0	0	170	170
Qatar	Mesaieed/Hydro	Green	0	0	0	0	0	100	260	360
India	Angul/Nalco	Brown	289	50	6	0	55	60	0	171
	Hirakud/Indal	Brown/creep	58	7	20	15	40	0	0	82
	Korba/Balco	Brown/creep	103	0	91	151	5	5	5	257
	Renukoot/Hindalco	Brown/creep	324	21	3	6	6	5	5	46
Egypt	Nag H'madi/Egyptalum	Brown	230	10	15	20	25	0	0	70
Mozambique	Mozal/BHPBilliton	Brown	408	134	12	12	12	82	110	362
	Hillside/Alusaf	Brown/creep	549	121	8	8	8	8	8	161
	AP50(Coega)	Green	0	0	0	0	-	-	60	60
Australia	Tomago	Creep	460	20	20	20	10	0	0	70
Argentina	Puerto Madryn/Aluar	Brown	274	6	0	47	69	8	0	130
Venezuela	Alcasa	Brown	210	0	0	120	120	0	0	240
	Venalum	Brown/creep	430	6	4	0	0	110	175	295
	Sao Luis/Alcoa	Brown	370	0	0	44	19	0	0	63
	Aluminio/CBA	Brown	314	26	15	30	15	0	70	156
Romania	Slatina	Creep	195	15	0	4	0	0	4	23
Slovakia	Ziar nad Hronom	Brown	127	57	0	0	0	0	0	57
Russia	Krasnoyarsk	Brown	900	40	19	19	15	15	27	135
	Sayansk	Brown	460	40	25	15	245	65	0	390
	Uralsky	Brown/creep	95	36	17	3	3	3	3	65
	Kandalaksha	Brown/creep	77	6	4	2	2	2	217	233
	Irkutsk	Brown/creep	275	0	10	6	6	27	107	157
	Komi	Green	0	0	0	0	0	200	0	200
	Various	Creep		30	44	23	11	29	14	150
Guangxi	Pingguo	Brown	137	8	0	63	187	0	0	258
Guizhou	Guizhou	Brown	235	0	35	125	0	0	0	160
Henan	Yong'an	Brown	200	16	73	52	59	0	0	200
Inner Mong.	Baotou East Hope	Green	5	117	128	0	0	0	0	245
Inner Mong.	Baotou	Green	165	66	24	0	5	50	0	145
Ningxia	Qingtonxia	Brown	240	75	71	14	90	0	0	250
Shandong	Huaxin	Brown	90	109	30	161	10	0	0	310
Shandong	Shanxi Guanlu	Brown	123	13	103	84	0	0	0	200
Shanxi	Shanxi (Chalco)	Green	0	0	25	190	64	0	140	420
Qinghai	Qiatou	Brown	3	147	33	117	0	0	0	297
	China Others	Brown/Green		635	281	49	-254	5	200	916
Unallocated Western World Capacity Creep and Closures				0	0	0	56	50	77	183
Total World				**2,072**	**1,634**	**1,671**	**1,177**	**1,048**	**1,569**	**9,170**
of which:										
Western World				**663**	**712**	**743**	**733**	**623**	**856**	**4,329**
Former Eastern Bloc				**1,409**	**922**	**928**	**444**	**426**	**713**	**4,841**

e = Morgan Stanley Research estimates

Source: CRU, Brookhunt, Morgan Stanley Research

Exhibit 53

Idle Smelting Capacity

Company/Operator	Amount ('000 tpy)	Plant	Distribution
Alcoa	441	Badin	120
		Warrick	41
		Ferndale1	189
		Wenatchee	91
Alcan	37	Kitimat	37
Golden Northwest	250	Dalles	82
		Goldendale	168
Glencore	249	Vancouver	115
		Columbia Falls	134
Commercial Dev. Co.	200	Mead	200
Ghanian State	200	Valco2	200
Longview Al LLC	204	Longview	204
Ormet		Hannibal	270
Alscon		Ikot Abasi	97
Aluminio SA		Veracruz	60
Indal		Alupuram	14
TLM		Sibenik	75
Fondel Metal		Sumgait	54
State		Tursunzade	190
Various		Total China	960
TOTAL IDLED CAPACITY			**3,301**

Data: CRU 1. Alcoa owns 61% of facility. 2. Alcoa owns 10% of the facility.
Source: Company data, Morgan Stanley Research

Alumina — Industry Structure Not Tight Enough to Restrict Supply Additions

Deep surplus looms in medium term

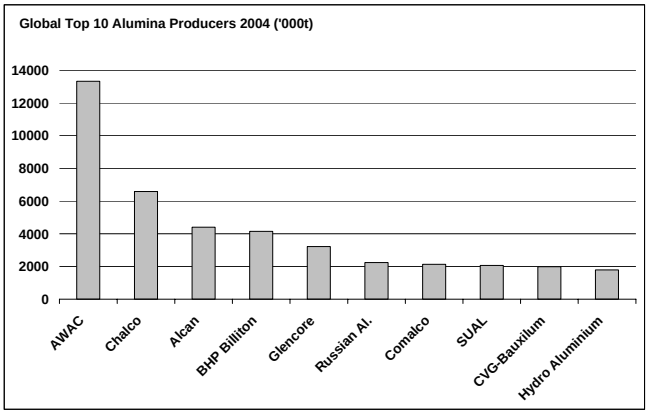
We forecast alumina to remain in a supply side deficit until 2007 after which we expect a large supply surplus to emerge. We anticipate linkage rates for contracted and spot alumina to decline gradually for the next 12 to 18 months, before dropping sharply as a result of excess capacity that we expect to put the market in a deep surplus position. With the firming of alumina prices over the past three years, a wave of new projects has emerged, including greenfield developments and brownfield expansions. We estimate that 21.3mt of new capacity will be added to global supply in 2005–08.

Key Points:

- **We forecast supply to be in deficit in 2005 at 0.4mt and a slight surplus in 2006** at 0.8mt, or 0.6% and 1.2% of market demand, respectively.
- **We forecast supply will swing into a deep surplus in 2007 and 2008** at 2.6mt and 5.7mt, respectively, representing 3.4% and 7.0% of the market.
- **We expect prices for spot alumina to ease gradually and linkage rates to drop** from 23.6% in 2004 to 20.3% of the LME Aluminium price for 2005 and 18.5% in 2006. We forecast linkage rates thereafter to decline sharply owing to excess supply to just 12.0% by 2008.

Exhibit 54

Top 10 Producers 2004



Source: CRU Group, Morgan Stanley Research

- **Significant new projects are firming towards implementation,** in our view, including those being promoted in China, Latin America, Australia and India.
- **China will remain a net importer of alumina**, although at slightly lower levels than at present.

Strong global demand growth driven by China

We forecast strong aluminium consumption trends to continue, which should underpin strong demand for alumina. We estimate that China accounted for 72% of growth in world alumina consumption in 2004, and 21% of global demand, up from just 10% in 1998. We forecast Chinese demand growth to moderate from 19% in 2004 to 4.5% in 2008. We expect world demand growth in metal grade alumina of 5.2% CAGR from 2003 to 2008, with Chinese consumption growth at 9.8% CAGR over the same period. Longer term, we expect the industry growth rate to normalise to around 4% a year.

China plays a significant role in spot alumina tightness

Similar to other metal commodities, Chinese demand plays a dominant role in determining market tightness and spot pricing. In 2005, we expect Chinese domestic alumina production to lag smelter demand by 6.4mt or 47%. The spot market is small with respect to the underlying consumption of alumina, accounting for only around 7-8% of purchases, with China responsible for about 60% of this.

Looking ahead, we expect China to remain a net importer of alumina despite a rapid rise in forecast domestic production (Exhibit 56). We also note that Chinese alumina producers are looking abroad to develop higher quality bauxite resources. A case in point is the Chalco/CVRD refinery planned for construction in Brazil that when completed will produce 1.8mtpa of alumina. We believe this trend could be enduring as the Chinese alumina producers look to increase margins through processing lower cost bauxite found in Australia, India and Brazil.

Please see analyst certification and other important disclosures starting on page 57.

Excess supply to constrain contract price rises

For the most part, alumina is sold under supply contracts with durations of 1–25 years, with the average being three to five years. Prices are generally linked to the LME three-month forward aluminium price. October and November is the period for traditional contract negotiation. We understand that over the past 12 months some short-term one-year alumina contracts for Australian material have fetched as much as 20-25% of the three-month aluminium price FOB, close to prevailing spot rates. We note that most existing long-term contracts have a put-call range, which is a function of when the contracts were negotiated. The call in a contract typically stands as low as 14%. This enables buyers to exercise their options and avoid spot exposure.

We expect the supply side surplus to result in spot prices weakening and eventually trading at a discount to the contract price level. We expect the contract pricing linkage rates to revert towards historical norms of 12.5% of the traded LME three-month forward price in the longer term.

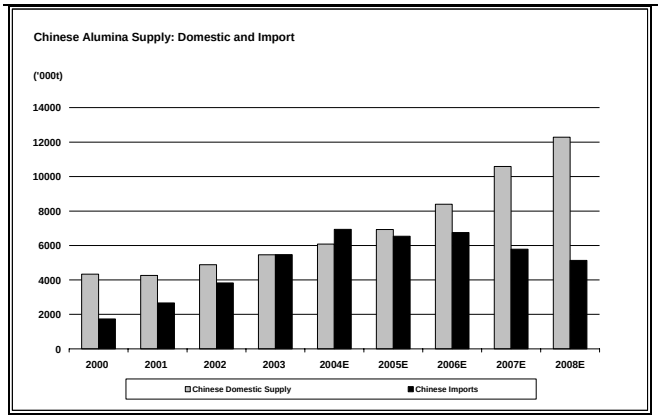
We forecast a surplus global capacity of 0.8mt in 2006 — equivalent to 1.2% of our forecast production of 70.9mt — that we believe should result in the start of an extended softening of alumina prices. Our forecast excess supply in 2006 is the result of the ramp up of expansion projects in China and Latin America, plus the new Comalco alumina refinery in Australia that should produce 1.4mtpa once fully ramped up. This is the first greenfield refinery to be constructed in 20 years and is aimed at supplying the Chinese market.

Spot prices have peaked

We expect spot prices to soften moderately in 2005 and decline further in 2006 given that alumina supply remains relatively tight in 2005 but should ease in 2006. We forecast the alumina spot price will fall to US$378/tonne in 2005 and US$327/tonne in 2006 from US$407/tonne in 2004. A key element to pricing in spot markets over the next two years will be Chinese consumption. Exhibits 55 and 57 show the impact of Chinese demand on spot alumina markets, sustaining high prices. This compares with the last peak that was caused by an explosion at the Gramercy refinery, which resulted in spot pricing rising above 15% of LME aluminium for a year. In the current environment, we expect Chinese demand to hold spot prices above long-term trend until 2007, when we forecast the market to move into a deep surplus.

Exhibit 55

Chinese Alumina Imports (2000–08e)



e = Morgan Stanley Research estimates

Source: CRU, Morgan Stanley Research

Exhibit 56

Alumina Price Forecasts

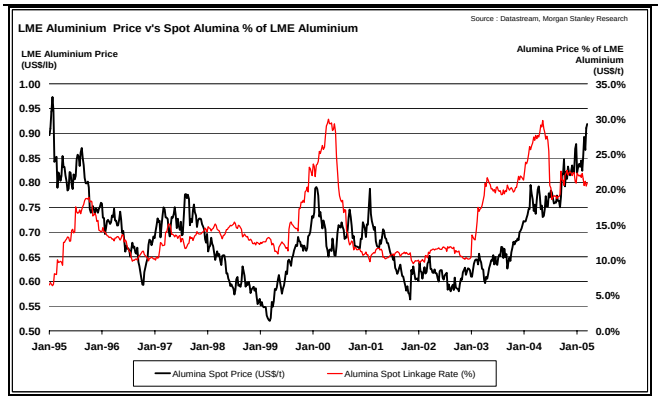
	2001	2002	2003	2004	2005e	2006e	2007e	2008e
LME Al. US$/t	1,450	1,450	1,427	1,721	1,863	1,769	1,653	1,543
LME Al. US$/lb	0.66	0.66	0.65	0.78	0.85	0.80	0.75	0.70
Spot Prices								
Linkage Rate %	*10.8*	*11.0*	*19.1*	*23.6*	*20.3*	*18.5*	*12.5*	*12.0*
Price US$/t	147	146	290	407	378	327	207	185
Contract Prices (Medium Term)								
Linkage Rate %	*11.3*	*11.4*	*15.4*	*17.8*	*16.0*	*15.0*	*13.0*	*12.0*
Price US$/t	163	165	219	305	298	265	215	185

e = Morgan Stanley Research estimates

Source: CRU, Morgan Stanley Research

Exhibit 57

Aluminium and Alumina Spot Prices, 1995–2005



Source: DataStream, Morgan Stanley Research

Exhibit 58

Alumina Supply/Demand Summary (2001–08e)

Year ('000 t)	2001	2002	2003	2004	2005e	2006e	2007e	2008e	Chg (kt) '03-'08e	% Chg '03-'08e	CAGR '03-'08e %
Alumina Demand											
North America	10,145	10,454	10,657	9,917	10,596	11,109	11,388	11,411	754	7.1	1.4
%		3.1	1.9	-6.9	6.8	4.8	2.5	0.2			
Latin America	3,853	4,298	4,370	4,566	4,625	5,067	5,523	5,763	1,393	31.9	5.7
%		*11.6*	*1.7*	*4.5*	*1.3*	*9.5*	*9.0*	*4.3*			
Western Europe	8,170	8,505	7,869	8,314	9,078	9,103	9,213	9,223	1,354	17.2	3.2
%		*4.1*	*-7.5*	*5.7*	*9.2*	*0.3*	*1.2*	*0.1*			
Eastern Europe	722	741	1,486	1,618	922	924	922	930	-556	-37.4	-8.9
%		*2.7*	*100.5*	*8.9*	*-43.0*	*0.2*	*-0.2*	*0.8*			
CIS	7,252	7,389	7,707	8,021	8,152	8,346	8,836	9,477	1,770	23.0	4.2
%		*1.9*	*4.3*	*4.1*	*1.6*	*2.4*	*5.9*	*7.3*			
China	6,930	8,712	10,924	13,020	14,369	15,517	16,656	17,402	6,478	59.3	9.8
%		*25.7*	*25.4*	*19.2*	*10.4*	*8.0*	*7.3*	*4.5*			
India & Mid East	3,969	4,124	4,520	5,058	5,529	6,098	6,846	7,616	3,096	68.5	11.0
%		*3.9*	*9.6*	*11.9*	*9.3*	*10.3*	*12.3*	*11.3*			
Australasia	4,104	4,182	4,255	4,345	4,358	4,412	4,432	4,441	186	4.4	0.9
%		*1.9*	*1.8*	*2.1*	*0.3*	*1.2*	*0.4*	*0.2*			
Africa	2,713	2,732	2,765	3,308	3,461	3,532	3,798	3,996	1,231	44.5	7.6
%		*0.7*	*1.2*	*19.6*	*4.6*	*2.1*	*7.5*	*5.2*			
Total Met. Grade Demand	47,856	51,137	54,553	58,167	61,090	64,108	67,613	70,259	15,706	28.8	5.2
%		*6.9*	*6.7*	*6.6*	*5.0*	*4.9*	*5.5*	*3.9*			
Non Met Grade Demand	4,526	4,544	4,742	5,067	5,244	5,402	5,537	5,647			
%		*0.4*	*4.4*	*6.9*	*3.5*	*3.0*	*2.5*	*2.0*			
Total Alumina Demand	**52,382**	**55,681**	**59,295**	**63,234**	**66,334**	**69,510**	**73,150**	**75,907**	**16,612**	**28.0**	**5.1**
%		*6.3*	*6.5*	*6.6*	*4.9*	*4.8*	*5.2*	*3.8*			
Alumina Supply											
North America	5,469	5,486	6,094	6,877	6,935	6,865	6,795	6,305	211	3.5	0.7
%		*0.3*	*11.1*	*12.8*	*0.8*	*-1.0*	*-1.0*	*-7.2*			
Latin America	10,652	11,012	12,262	12,913	12,900	13,908	16,854	18,334	6,072	49.5	8.4
%		*3.4*	*11.4*	*5.3*	*-0.1*	*7.8*	*21.2*	*8.8*			
Western Europe	4,669	4,859	4,834	4,884	6,205	6,205	6,205	6,205	1,371	28.4	5.1
%		*4.1*	*-0.5*	*1.0*	*27.0*	*0.0*	*0.0*	*0.0*			
Eastern Europe	804	645	641	681	1,344	1,306	768	672	31	4.8	0.9
%		*-19.8*	*-0.5*	*6.2*	*97.3*	*-2.9*	*-41.2*	*-12.5*			
CIS	5,333	5,570	5,888	6,068	6,497	6,830	6,560	6,844	956	16.2	3.1
%		*4.5*	*5.7*	*3.1*	*7.1*	*5.1*	*-3.9*	*4.3*			
China	4,263	4,887	5,460	6,087	7,072	8,627	10,061	11,594	6,133	112.3	16.3
%		*14.6*	*11.7*	*11.5*	*16.2*	*22.0*	*16.6*	*15.2*			
India & Mid East	2,263	2,744	3,007	3,073	3,102	3417	3,855	5,303	2,297	76.4	12.0
%		*21.3*	*9.6*	*2.2*	*0.9*	*10.2*	*12.8*	*37.6*			
Australasia	16,110	16,179	16,550	16,680	16,313	17,623	19,048	20,473	3,923	23.7	4.3
%		*0.4*	*2.3*	*0.8*	*-2.2*	*8.0*	*8.1*	*7.5*			
Africa	640	669	731	791	737	737	722	954	223	30.5	5.5
%		*4.5*	*9.3*	*8.2*	*-6.8*	*0.0*	*-2.1*	*32.1*			
Total Met. Grade Production	50,203	52,050	55,467	58,054	61,104	65,516	70,868	76,683	21,215	38.2	6.7
%		*3.7*	*6.6*	*4.7*	*5.3*	*7.2*	*8.2*	*8.2*			
Non Met Grade production	4,526	4,544	4,742	5,067	5,244	5,402	5,537	5,647	905	19.1	3.6
%		*0.4*	*4.4*	*6.9*	*3.5*	*3.0*	*2.5*	*2.0*			
Total Alumina Production	**54,729**	**56,594**	**60,209**	**63,121**	**66,348**	**70,917**	**76,404**	**82,330**	**22,121**	**36.7**	**6.5**
%		*3.4*	*6.4*	*4.8*	*5.1*	*6.9*	*7.7*	*7.8*			
Less Working Capital Adj.					403	571	686	741			
Total Alumina Supply	**54,729**	**56,594**	**60,209**	**63,121**	**65,945**	**70,346**	**75,719**	**81,589**	**21,380**	**35.5**	**6.3**
Alumina Surplus/(Deficit)	**2,346**	**913**	**914**	**-113**	**-389**	**836**	**2,569**	**5,683**			
%	*4.3*	*1.6*	*1.5*	*-0.2*	*-0.6*	*1.2*	*3.4*	*7.0*			

e = Morgan Stanley Research estimates

Source: CRU, Brook Hunt, Morgan Stanley Research

Please see analyst certification and other important disclosures starting on page 57.

Exhibit 59

Alumina Capacity Addition Summary

Region		('000 tpy)	2004	2005e	2006e	2007e	2008e
Australasia	Wagerup	2,300	-	-	-	-	1,000
	Gove	1,970	30	-	-	1,200	500
	Pinjarra	3,465	-	100	-	300	-
	Kwinana	2,000	-	-	-	-	-
	Worsley	3,250	-	-	250	-	-
	CAR	0	100	1,125	175	-	-
	Total	**12,985**	**130**	**1,225**	**425**	**1,500**	**1,500**
South Asia	Damanjodi, Nalco	1,575	-	-	-	-	150
	Belgaum, Indal	350	-	-	100	200	-
	Muri Bihar, Indal	120	-	-	-	200	190
	Mettur	66	6	-	-	-	-
	Renukoot, Hindalco	600	60	40	-	-	-
	Vedanta	0	-	-	350	650	400
	Utkal Alumina	0	-	-	-	-	400
	Total	**2,711**	**66**	**40**	**450**	**1,050**	**1,140**
W. Europe	Distomon	800	50	-	-	-	-
	Total	**800**	**50**	**-**	**-**	**-**	**-**
Latin America	Clarendon	1,250	150	100	-	-	200
	Alunorte	2,300	100	-	600	900	300
	Bauxilum	2,000	-	-	100	50	-
	Sao Luis	1,300	-	-	-	1,200	800
	Sorocaba	550	-	30	90	-	-
	Paranam	1,950	20	135	95	-	-
	Alpart	1,600	50	50	-	-	-
	Chalco's JV w/ CVRD in Brazil	-	-	-	-	1,000	800
	Total	**10,950**	**320**	**315**	**885**	**3,150**	**2,100**
North America	Arvida	1,265	35	-	-	-	-
	Total	**1,265**	**35**	**-**	**-**	**-**	**-**
Middle East	Jajarm	150	50	80	-	-	-
Africa	Guinea - Greenfield (AWAC)		60	-	-	-	300
Unallocated Capacity Creep			-	-	-	-	279
	Western World Total	**28,861**	**711**	**1,660**	**1,760**	**5,700**	**5,319**
China	Shanxi	1,400	-	300	500	-	-
	Zhongzhou	850	130	120	-	-	-
	Zhengzhou	1,400	-	200	700	-	-
	Guizhou	750	50	50	50	250	150
	Shandong	930	120	150	-	170	200
	Pingguo	675	275	-	50	250	350
	Nanchuan	0	50	20	60	20	-
	Guangxi Huayin	-	-	-	-	800	800
	NMGA refineries	48	2	3	3	3	3
	Luneng Jinbei	-	-	-	100	700	200
	Total	**6,053**	**627**	**843**	**1,463**	**2,193**	**1,703**
CIS	Achinsk	1,040	-	-	150		-
	Uralsky	730	20	-	-	-	-
	Pavlodar	1,400	50	50	-	-	-
	Nikolayev	1,200	100	-	200	100	-
	Zaporozhye	245	10	-	-	-	15
	Komi	-	-	-	-	-	300
	Total	**4,615**	**180**	**50**	**350**	**100**	**315**
E. Europe	Tulcea	400	40	40	-	-	-
	Total Eastern Europe	**400**	**40**	**40**	**-**	**-**	**-**
	F. Eastern bloc Total	**11,068**	**847**	**933**	**1,813**	**2,293**	**2,018**
	WORLD TOTAL	**39,929**	**1,558**	**2,593**	**3,573**	**7,993**	**7,337**

e = Morgan Stanley Research estimates

Source: CRU, Brook Hunt, Morgan Stanley Research

Zinc — We Expect Zinc to Play Catch-Up

Zinc has lagged other commodities owing to a structural supply overhang caused by large stockpiles held off-exchange ('hidden stocks'), which have historically been delivered into warehouses on any price strength. This has resulted in reported LME stocks not being run down to the same extent as other base metals. Were it not for these stocks, we believe the market would have been in deficit, in line with other LME metals.

We think this issue is now behind us. Although difficult to measure accurately, our analysis indicates that off-market stocks have been significantly depleted, most tellingly evidenced by recent falls in reported LME stocks. We consequently think the slack has now largely dropped out of the system and expect a more normal price/stock relationship to reassert itself.

The key positive indicators that we watch are sustained strong Chinese GDP/IP growth, falling LME stocks, Chinese steel demand and Chinese zinc net import/export data.

Our price forecasts are ahead of consensus

The positive response of the zinc price to falls in LME inventories since the fourth quarter of 2004 is a strong indicator of fundamentals reasserting themselves in the zinc market. We forecast zinc to be in significant supply deficit in 2005 and a continued, albeit reduced, deficit in 2006, giving it a strong fundamental underpinning to spur outperformance. We expect stocks to fall to 3.6 weeks of consumption in 2005 and tighten further to 3.3 weeks in 2006. Inventory tightness to this extent has historically supported prices well in excess of US$0.65/lb (see Exhibit 61). This greater inventory tightness in 2006 versus 2005 supports our view of higher prices.

Why are we so far ahead of consensus? Zinc is an under-analysed commodity in the global market, owing to the fact that it is not particularly significant to any of the large-cap miners (we estimate it will account for 4% of Anglo American's 2005 EBIT and 5% of Xstrata's). We estimate that it accounts for ~2% of global sector earnings on a market cap-weighted basis.

Exhibit 60

Summary Supply/Demand Balance: We Expect Stocks to Consumption to Reach Critical Levels in 2006

('000 t)	2003	2004	2005e	2006e	2007e	2008e
World Refined Prodn	9,885	10,071	10,350	11,030	11,715	12,065
% Change	*2.5*	*1.9*	*2.8*	*6.6*	*6.2*	*3.0*
US Stockpile Sales	4	32	35	35	3	0
World Consumption	9,684	10,275	10,775	11,123	11,310	11,671
% Change	*3.7*	*6.1*	*4.9*	*3.2*	*1.7*	*3.2*
World Balance	**205**	**(172)**	**(390)**	**(58)**	**408**	**394**
Price (US$/lb)	0.38	0.48	0.68	0.70	0.57	0.47
Western Stocks	1,200	1,145	755	697	1,105	1,499
Weeks of Consumption	**6.4**	**5.8**	**3.6**	**3.3**	**5.1**	**6.7**

e = Morgan Stanley Research estimates

Source: CRU, Morgan Stanley Research

Exhibit 61

Our Price Forecasts Are Significantly Ahead of Consensus

US$/lb	Morgan Stanley	Consensus	Difference (%)
2005	0.68	0.52	31
2006	0.70	0.50	40
2007	0.57	0.49	16

Source: IBES, Morgan Stanley Research estimates

Keeping our mid-cycle forecast unchanged. Although our US$0.47/lb mid-cycle price is fairly close to the long-run average over the past 25 years, we feel it likely has modest upside risk. This is because rather than being a *backwards*-looking number, a mid-cycle price represents the average price at which *future* marginal capacity on the global cost curve can economically be brought on. This will be affected by several dynamics: scarcity of resources (there are no mega-projects on the horizon currently), levels of exploration expenditure, technological developments, producer currency movements, quality of ore bodies discovered (for example, wealth of by-products generally falling), and infrastructure costs and discount rates that are likely to be higher in higher-risk countries. While this is a fairly subjective judgement, we see relatively few downward pressures remaining on the zinc cost curve.

Stocks — finally falling

The key reason for zinc's underperformance versus other base metals since early 2002 is a significant structural supply overhang. Two factors were Zinifex's Century mine being kept in production by its creditor banks and the build-up of off-exchange stocks.

Precise levels of hidden stocks are difficult to estimate. As with most statistics, it is more important to observe the rate of change rather than the absolute level. Whatever one's conclusion as to the final levels, the most telling indicator is that LME stockpiles have finally started to fall in a sustained fashion since the fourth quarter of 2004. We believe that these stockpiles are starting to become reliable indicators of demand relative to supply, as with other LME metals, now that the slack has left the system.

During the period of stock-build (2001-04), low prices failed to encourage investment in new mine production. Hence, metal production at present is constrained by a shortage of available concentrate. We estimate that 300-400kt more metal was consumed than produced over 2001-04. Most of the draw-down that occurred came from hidden stocks.

Supply — lagging demand

CRU expects mine supply, the key mid-term driver for zinc supply and the overall market position, will slow from 7.7% growth in 2006 to just 1.1% in 2009. We note a number of major projects remain 'in the wings' (Anglo American's Gamsburg and Teck Cominco/Noranda's Lennard Shelf), but these may be held back until Zinifex's Century (the second largest zinc mine in the world) approaches the end of its life in around 10 years time.

Our reservation is that, longer term, the outlook may not be so bright because marginal mine supply remains in the hands of small single-asset players who are less likely to act in the interests of the market. CRU estimates that a further 75% of the incremental capacity over the next five years could be added from potential high-cost projects. We do not include these in our supply forecasts.

Demand — China the swing factor

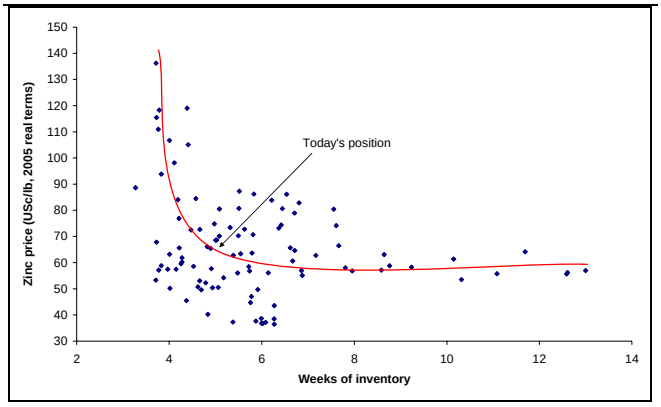
Zinc's demand story is a familiar one across mining, with China the key swing factor that pushes demand for the commodity above long-run average GDP growth rates. Rising intensity of demand as nations industrialise provides a strong structural underpinning to support the sustainability of this demand growth.

Steel capacity is the key demand driver for zinc. Our steel team forecasts world steel capacity rising 4.1% in 2005, with China growing 10.7% in absolute terms, but contributing 63% of the incremental capacity growth. As a result, the picture in the zinc market is a similar one: we expect China to account for 40% of the increase in zinc demand in 2005 and 23% of total demand.

In 2004, China moved from being a significant exporter of refined zinc (peaking at 65kt in April 2002) to a net importer (10kt in February 2004) owing to the expansion of Chinese steel capacity and limited availability of concentrate. We expect this positive development to continue in 2005-06, and our steel team forecasts Chinese steel capacity will increase by 10.7% in 2005 and 9.7% in 2006.

Exhibit 62

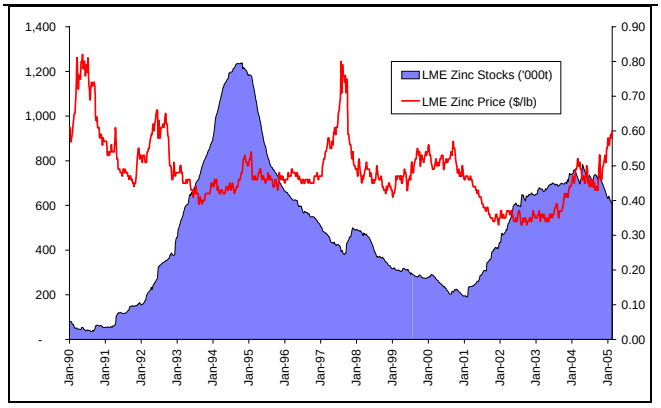
Lower Inventories Should Herald Strongly Higher Prices



Source: CRU, Datastream, Morgan Stanley Research

Exhibit 63

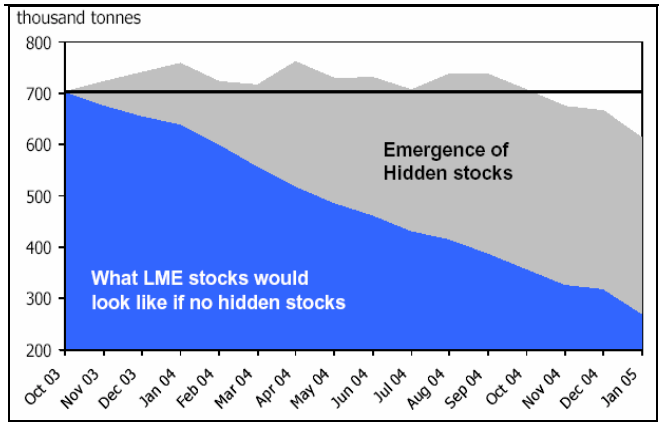
Zinc Price versus LME Stocks, 1990-2005



Source: Datastream

Exhibit 64

Zinc: Hidden Stocks, 2003–05



Source: Teck Cominco, Morgan Stanley Research

Exhibit 65

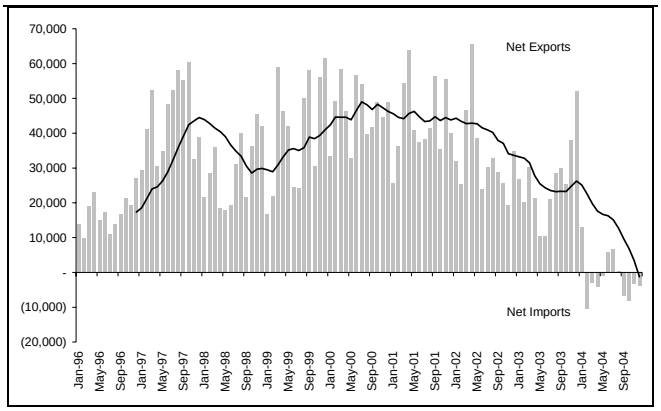
Major Incremental Changes to Mine Supply — Antamina and Apex Silver's San Cristobal Are the Key Projects

			Annual Change ('000 t)						2004-09e
Country	**Operator**	**Operation**	**2004**	**2005e**	**2006e**	**2007e**	**2008e**	**2009e**	**Change**
New Mines									
Bolivia	Apex Silver	San Cristobal	-	-	-	70	120	37	227
China	Sichuan Hongda	Lanping	75	50	50	25	50	-	175
Kazakhstan	Glencore	Shaimerden	-	-	10	15	5	15	45
China	Batang	Jinding	-	15	15	10	-	-	40
Major Reactivations									
Peru	Volcan	Total	281	24	16	19	11	2	72
Major Expansions									
Peru	Noranda et al	Antamina	205	(30)	100	50	75	(50)	145
India	HZL (Vedanta)	Rampura Agucha	276	71	44	-	-	-	115
Australia	Xstrata	Mt Isa / Hilton	183	51	51	12	(12)	(15)	87
Russia	UGMK	Various	121	33	25	15	2	3	78
Ireland	Boliden	Tara	200	38	25	(2)	(3)	(3)	55
Canada	Noranda	Brunswick M&S	268	22	14	8	-	-	44
Canada	Falconbridge	Kidd Creek	84	25	15	4	-	-	44
Mine Closures									
Canada	Noranda	Bell Allard	99	(99)	-	-	-	-	(99)
Canada	Breakwater	Bouchard	56	(45)	(11)	-	-	-	(56)
Bolivia	Comsur	Porco	43	-	-	-	-	(43)	(43)
Argentina	Comsur	El Aguilar	42	-	(35)	(7)	-	-	(42)
Total World Mine Production			**9,441**	**9,953**	**10,723**	**11,427**	**11,911**	**12,043**	
% Change				*5.4*	*7.7*	*6.6*	*4.2*	*1.1*	*27.6*
Total Mine Production Change				**512**	**770**	**704**	**484**	**132**	**2,602**

Source: CRU estimates, Company Data

Exhibit 66

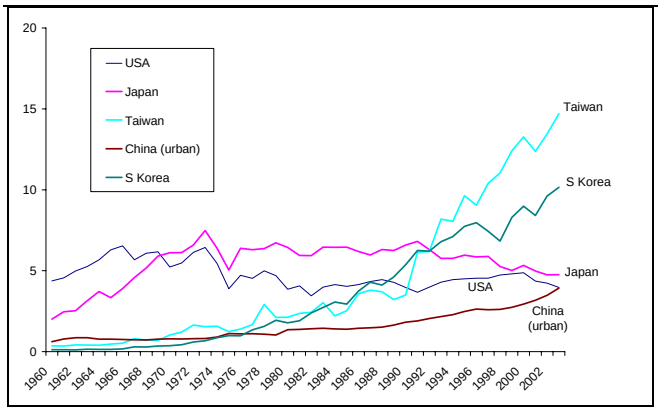
China's Transformation to Net Importer of Zinc Since Early 2004 Has Been a Key Swing Factor, 1996-2004



Note: Line shows 12-month moving average
Source: CRU, GITS, Morgan Stanley Research

Exhibit 67

Rising Intensity of Consumption in China Underpins Structural Growth (tonnes/capita) 1980–2004



Source: CRU, IMF, Morgan Stanley Research

Exhibit 68

Global Zinc Supply/Demand, 2001-08e

('000 tonnes)	2001	2002	2003	2004	2005e	2006e	2007e	2008e
Production								
North America	1,339	1,439	1,436	1,434	1,431	1,443	1,455	1,476
% Change Year on Year	*-3.5*	*7.4*	*-0.2*	*-0.1*	*-0.2*	*0.8*	*0.8*	*1.4*
South & Central America	434	461	510	495	479	482	486	493
% Change Year on Year	*1.4*	*6.2*	*10.7*	*-3.0*	*-3.2*	*0.5*	*0.8*	*1.4*
Australia	556	567	553	483	482	485	489	496
% Change Year on Year	*13.8*	*1.9*	*-2.4*	*-12.6*	*-0.3*	*0.5*	*0.8*	*1.4*
Western Europe	2,298	2,328	2,168	2,132	2,155	2,188	2,206	2,238
% Change Year on Year	*4.9*	*1.3*	*-6.9*	*-1.7*	*1.1*	*1.5*	*0.8*	*1.4*
Non-Communist Asia	1,535	1,667	1,765	1,778	1,883	1,958	1,993	2,022
% Change Year on Year	*6.5*	*8.6*	*5.9*	*0.7*	*5.9*	*4.0*	*1.8*	*1.4*
Africa	135	148	193	268	286	288	290	294
% Change Year on Year	*4.4*	*9.5*	*30.4*	*39.1*	*6.7*	*0.5*	*0.8*	*1.4*
Western World	**6,298**	**6,609**	**6,625**	**6,575**	**6,700**	**6,825**	**6,900**	**7,000**
% Change Year on Year	*3.8*	*4.9*	*0.2*	*-0.7*	*1.9*	*1.9*	*1.1*	*1.4*
Central & Eastern Europe	316	290	282	288	279	298	326	336
% Change Year on Year	*0.3*	*-8.2*	*-2.8*	*2.3*	*-3.3*	*7.0*	*9.3*	*3.1*
CIS	587	603	598	602	628	740	860	911
% Change Year on Year	*1.9*	*2.7*	*-0.8*	*0.7*	*4.3*	*17.7*	*16.3*	*5.9*
China	2,095	2,111	2,345	2570	2709	3131	3589	3777
% Change Year on Year	*7.1*	*0.8*	*11.1*	*9.6*	*5.4*	*15.6*	*14.6*	*5.2*
Other Communist Asia	31	34	35	35	34	36	39	41
% Change Year on Year	*-16.2*	*9.7*	*2.9*	*0.7*	*-4.8*	*7.0*	*9.3*	*3.1*
Total Former Eastern Bloc	3,029	3,038	3,260	3,496	3,650	4,205	4,815	5,065
% Change Year on Year	*5.0*	*0.3*	*7.3*	*7.2*	*4.4*	*15.2*	*14.5*	*5.2*
Total World	**9,327**	**9,647**	**9,885**	**10,071**	**10,350**	**11,030**	**11,715**	**12,065**
% Change Year on Year	*4.2*	*3.4*	*2.5*	*1.9*	*2.8*	*6.6*	*6.2*	*3.0*
World ex-China	7232	7536	7540	7501	7641	7899	8126	8288
% Change Year on Year	*3.4*	*4.2*	*0.1*	*(0.5)*	*1.9*	*3.4*	*2.9*	*2.0*
Consumption								
Non-Communist Asia	2,415	2,556	2,658	2,790	2,905	2,955	2,988	3,058
% Change Year on Year	*-1.5*	*5.8*	*4.0*	*5.0*	*4.1*	*1.7*	*1.1*	*2.3*
China	1,525	1,750	2,045	2,275	2,475	2,673	2,860	3,046
% Change Year on Year	*13.0*	*14.8*	*16.9*	*11.2*	*8.8*	*8.0*	*7.0*	*6.5*
Other Communist Asia	52	50	53	54	53	53	55	56
% Change Year on Year	*2.0*	*-3.8*	*6.0*	*1.9*	*-1.9*	*0.0*	*3.8*	*1.8*
Total Asia	3,992	4,356	4,756	5,119	5,433	5,681	5,903	6,160
% Change Year on Year	*3.6*	*9.1*	*9.2*	*7.6*	*6.1*	*4.6*	*3.9*	*4.4*
Western Europe	2,344	2,281	2,265	2,340	2,410	2,465	2,450	2,485
% Change Year on Year	*-2.7*	*-2.7*	*-0.7*	*3.3*	*3.0*	*2.3*	*-0.6*	*1.4*
Central & Eastern Europe	197	192	203	209	215	210	223	237
% Change Year on Year	*-1.0*	*-2.5*	*5.7*	*3.0*	*2.9*	*-2.3*	*6.2*	*6.3*
Total Europe	2,541	2,473	2,468	2,549	2,625	2,675	2,673	2,722
% Change Year on Year	*-2.5*	*-2.7*	*-0.2*	*3.3*	*3.0*	*1.9*	*-0.1*	*1.8*
North America	1,634	1,634	1,580	1,700	1,780	1,820	1,780	1,815
% Change Year on Year	*-7.4*	*0.0*	*-3.3*	*7.6*	*4.7*	*2.2*	*-2.2*	*2.0*
South & Central America	364	387	374	385	392	395	395	400
% Change Year on Year	*0.0*	*6.3*	*-3.4*	*2.9*	*1.8*	*0.8*	*0.0*	*1.3*
CIS	295	305	320	335	355	360	370	380
% Change Year on Year	*5.4*	*3.4*	*4.9*	*4.7*	*6.0*	*1.4*	*2.8*	*2.7*
Africa	169	177	184	185	188	190	187	192
% Change Year on Year	*-0.6*	*4.7*	*4.0*	*0.5*	*1.6*	*1.1*	*-1.6*	*2.7*
Total World	**8,997**	**9,334**	**9,684**	**10,275**	**10,775**	**11,123**	**11,310**	**11,671**
% Change Year on Year	*-0.5*	*3.7*	*3.7*	*6.1*	*4.9*	*3.2*	*1.7*	*3.2*
World ex-China	7,472	7,584	7,639	8,000	8,300	8,450	8,450	8,625
% Change Year on Year	*(2.8)*	*1.5*	*0.7*	*4.7*	*3.8*	*1.8*	*0.0*	*2.1*
US Stockpile Sales	24	5	4	32	35	35	3	0
World Balance	**354**	**318**	**205**	**(172)**	**(390)**	**(58)**	**408**	**394**
Price (US$/lb, LME)	0.41	0.36	0.38	0.48	0.68	0.70	0.57	0.47
Western World Stocks	1,448	1,094	1,200	1,145	755	697	1,105	1,499
Weeks of Consumption	**8.4**	**6.1**	**6.4**	**5.8**	**3.6**	**3.3**	**5.1**	**6.7**
Surplus/(Deficit) as % of Production	*3.8*	*3.3*	*2.1*	*-1.7*	*-3.8*	*-0.5*	*3.5*	*3.3*
kt Change								
Total World Production	376	320	238	186	279	680	685	350
Total World Consumption	(43)	337	350	591	500	348	187	361
Surplus/(Deficit)	419	(36)	(113)	(377)	(218)	332	466	(14)

NC Asia = Japan, South Korea, India, Thailand, Iran, Turkey; Communist Asia = China, N Korea, Vietnam

e = Morgan Stanley Research estimates

Source: ILZSG, CRU, Company data, Morgan Stanley Research

China is the key swing factor taking global demand growth above long-run GDP growth rates

Molybdenum — We Expect Price to Mean Revert

Moly prices have increased sharply in the past year to record new highs of US$35/lb. We think that, in the longer term, this price is unsustainable. Of all commodities, moly is at its highest price relative to long-term trend levels, at 9 times the historical average. We think the downside risks are greatest for this commodity. World consumption was up 7.1% in 2004 according to CRU, while supply only increased by 5%. The fall in Chinese exports has been a key driver of recent supply shortages. We expect the market to move back into balance in 2006, which will result in a major mean reversion in the price. History shows that prices do not stay at these levels for extended periods. In 2005, we forecast the price to average US$24/lb and US$15/lb in 2006.

Molybdenum is tight and at record pricing levels

Moly demand has risen materially owing to strong global steel demand. We estimate that 70% of moly goes into the steel industry and 30% into the chemical and foundry industry. We believe steel demand breaks down as follows: 80% stainless and 20% alloys related. Moly is primarily an anti-corrosion and hardening agent.

Moly is primarily a by-product of copper mining

We estimate 60% of moly is a by-product of copper, while 40% is primary. In 2004, global demand for moly was 370 million pounds and production was 360 million pounds. Moly has been in deficit during the past three years. There should be more moly coming on over the next 12-18 months as copper production increases and some of the primary mines bring back idled capacity. China, the US and Chile are the major producers. We believe there is sufficient roaster capacity to process moly, but some of this requires capital spending.

Molybdenum supply to increase by 28% over four years

Chinese moly exports fell by 2% YoY in 2004, with mine production down 3% in the same period. CRU believes that greater regulation of the local mining industry and power shortages are limiting Chinese concentrate supplies. In addition, there has been a 22.5% anti-dumping duty imposed on Chinese suppliers entering the EU. On the production side, we now estimate western world production will increase by 9% in 2005 with Chilean output from Los Pelambres, Codelco and Disputada. Phelps Dodge, Antamina (BHPB, Teck Cominco), Collahuasi (Anglo, Noranda) and Codelco have announced plans to increase production by a total of 110m lbs over the next four years. Exhibits 73-74 highlight the global supply demand trends over the past 12 years.

Exhibit 69

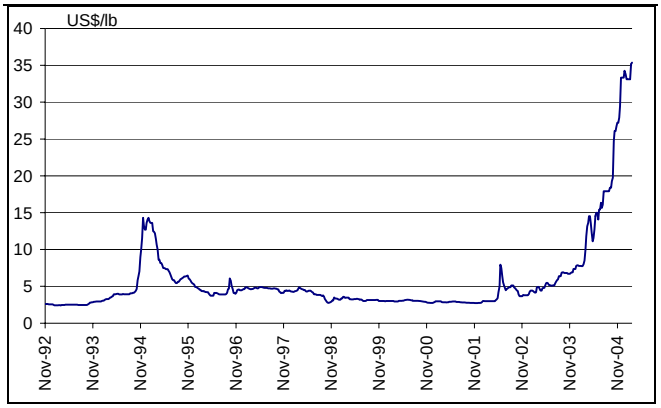
What's Changed in the Molybdenum Market?

- Stockpiles are at their lowest for 14 years
- 2004 demand increased by 7.4%
- Supply problems Chinese and Canadian Mines in 2004
- Underinvestment in conversion capacity due to low prices in the past 5 years
- New supply has now being activated (Phelp's Dodge, Anglo American)
- Spot moly price is now 9 times the 10-year average

Source: International Molybdenum Association, Morgan Stanley Research

Exhibit 70

Molybdenum Price Shoots to the Moon



Source: Datastream

Exhibit 71

Primary Molybdenum Consumption Sectors by End-Use

Stainless Steels & Super Alloys	30%
Low Alloy Steels	30%
Chemicals & Mo Metal	20%
Tool & High Speed Steels	10%
Foundry	10%

Source: International Molybdenum Association, Morgan Stanley Research

Exhibit 72

Molybdenum Supply/Demand to Remain Tight in 2005, But Moving into Balance in 2006

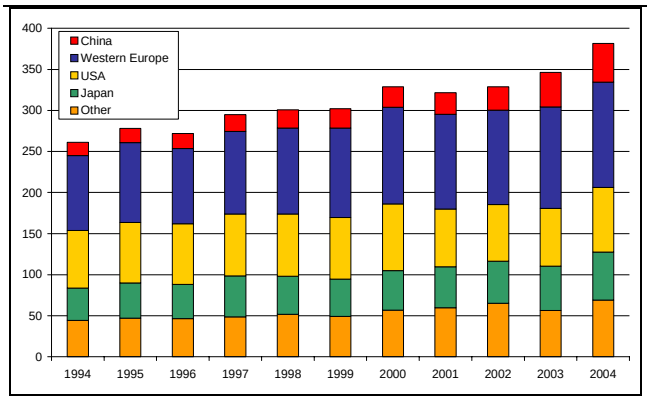
Lbs Million	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005e	2006e
Consumption															
USA	52.9	60.3	70.2	73.5	74	75.3	75.7	75.2	79.9	72.5	70.6	72.3	76.4	79.5	82.6
Change YoY %		*14*	*16*	*5*	*1*	*2*	*1*	*-1*	*6*	*-9*	*-3*	*2*	*6*	*4*	*4*
Europe	77.4	80.5	94.1	100.3	94.1	102.8	106.5	110.5	119.8	117.2	117.3	122.2	129.6	134.8	140.2
Change YoY %		*4*	*17*	*7*	*-6*	*9*	*4*	*4*	*8*	*-2*	*0*	*4*	*6*	*4*	*4*
Japan	33.2	34.3	35.3	38	36.6	44.9	42.5	40.9	43.9	45.5	45.1	45.4	49.1	52.0	55.2
Change YoY %		*3*	*3*	*8*	*-4*	*23*	*-5*	*-4*	*7*	*4*	*-1*	*1*	*8*	*6*	*6*
Rest of W. World	21.2	29.6	31.8	34	35.7	38	41.3	41.6	45.7	44.4	46.2	49.7	53	56.2	59.6
Change YoY %		*40*	*7*	*7*	*5*	*6*	*9*	*1*	*10*	*-3*	*4*	*8*	*7*	*6*	*6*
Total W. World	184.6	204.6	231.4	245.8	240.4	261.1	266	268.2	289.4	279.6	279.2	289.7	308.7	327.2	346.9
Change YoY %		*11*	*13*	*6*	*-2*	*9*	*2*	*1*	*8*	*-3*	*0*	*4*	*7*	*6*	*6*
Former E. Bloc	30.2	31.4	34.8	37	37.6	44.2	46.3	48.2	50.9	51.2	53.2	55.7	62.4	66.1	70.1
Change YoY %		*4*	*11*	*6*	*2*	*18*	*5*	*4*	*6*	*1*	*4*	*5*	*12*	*6*	*6*
Total World Consumption	**214.8**	**236.1**	**266.2**	**282.8**	**278.1**	**305.3**	**312.3**	**316.4**	**340.2**	**330.8**	**332.5**	**345.4**	**370.5**	**392.7**	**416.3**
Change YoY %		*10*	*13*	*6*	*-2*	*10*	*2*	*1*	*8*	*-3*	*1*	*4*	*7*	*6*	*6*
Supply															
W. World Production	175	147.8	170.1	213.1	196.5	216.3	217.3	204.9	213.4	208.1	182.5	204.4	225.3	245.6	267.7
Change YoY %		*-16*	*15*	*25*	*-8*	*10*	*0*	*-6*	*4*	*-2*	*-12*	*12*	*10*	*9*	*9*
Conversion Loss (1.5%)	2.6	2.2	2.6	3.2	2.9	3.2	3.3	3.1	3.2	3.1	2.7	3.1	3.4	3.4	3.4
Recovery from Catalysts	5	7	6	7	5	5.2	6.8	7.1	7.5	9	10	10.3	10	10	10
Net imports from E. Bloc	18.1	46.7	51.7	45.5	38.9	59.9	61.4	70.1	74	71.2	76.8	74.6	66.3	66.3	66.3
Change YoY %		*158*	*11*	*-12*	*-15*	*54*	*3*	*14*	*6*	*-4*	*8*	*-3*	*-11*	*0*	*0*
Total W. World Supply	195.5	199.3	225.3	262.4	237.5	278.1	282.2	278.9	291.7	285.1	266.6	286.2	298.2	318.5	340.6
Former E. Bloc Production						98.5	107.4	108.3	131.8	130.9	126.3	128	127.7	135.4	143.5
Change YoY %							*9*	*1*	*22*	*-1*	*-4*	*1*	*0*	*6*	*6*
World Production						314.8	324.6	313.1	345.2	339	308.8	332.4	353	453.8	484.1
Change YoY %							*3*	*-4*	*10*	*-2*	*-9*	*8*	*6*	*6*	*6*
World Supply						**316.7**	**328.2**	**317.2**	**349.5**	**344.9**	**316**	**339.6**	**359.6**	**387.5**	**417.8**
W. World Market Balance	10.9	-5.4	-6.1	16.6	-3	17	16.2	10.7	2.3	5.6	-12.7	-3.4	-9.9	-5.2	1.5
W. World Market Stocks	86.8	97.7	92.3	86.2	102.8	99.8	116.8	133	143.7	146	151.6	148.2	106.5	101.3	102.8
Months Consumption	5.6	5.7	4.8	4.2	5.1	4.6	5.3	6.0	6.0	6.3	6.5	6.1	4.1	3.7	3.6
World Market Balance						**11.5**	**15.8**	**0.8**	**9.2**	**14.1**	**-16.4**	**-5.8**	**-10.9**	**-5.2**	**1.47**
Price US$/kg	**6.15**	**5.65**	**6.5**	**30**	**10.9**	**10.05**	**9.6**	**7.25**	**6.55**	**6.15**	**6.075**	**8.7**	**31**	**26**	**15**
Price US$/lb	**2.8**	**2.6**	**2.9**	**13.6**	**4.9**	**4.6**	**4.4**	**3.3**	**3.0**	**2.8**	**2.8**	**3.9**	**16.2**	**24.0**	**15.00**

e = Morgan Stanley Research estimates *Source: CRU, Morgan Stanley Research*

Moly market to move back into balance in 2006. Stockpiles begin to rebuild

Exhibit 73

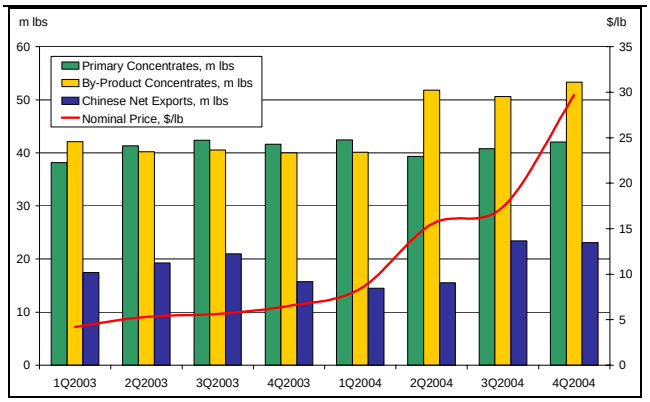
Molybdenum Demand Trends, 1994–2004



Source: CRU, Morgan Stanley Research

Exhibit 74

Molybdenum Production Trends, 2003–04



Source: CRU, Morgan Stanley Research

Platinum: Production Growth Downgraded

Supply Cutbacks Improve Market Balance

Anglo Platinum, the world's largest producer of platinum and a subsidiary of Anglo American, recently cut its production targets for 2006. We have reduced our 2006 and 2008 production estimates for the company to 2.75mozs and 3.1mozs, respectively. As the world's number one producer of platinum, Anglo's alterations on its production forecasts have the potential to influence the price, in our view.

Platinum market demand improves

We are upbeat about the pricing prospects for platinum and rhodium. We see the platinum price in the near term remaining at the US$850+/oz mark as a result of solid demand for industrial usage and a return of Chinese jewellery demand. Due to lower 2005-6 platinum production, we now forecast the market to be in balance in 2005 (we had previously expected a modest surplus) and a smaller surplus in 2006 than previously (96koz, compared with our previous 173koz). The recovery in Chinese jewellery demand, even at current prices, has been a positive surprise and should support higher prices for longer, in our view.

The key changes to our assumptions for the platinum market include:

- 2005 platinum price forecast increased from US$838/oz to US$860/oz.
- Decrease in Anglo Platinum 2006 production by 100kozs to 2.75mozs.
- Decrease in Anglo Platinum's 2008 production by 100kozs to 3.1mozs.
- Increase in jewellery demand to 2% growth in 2005.

Johnson Matthey highlights Chinese jewellery recovery

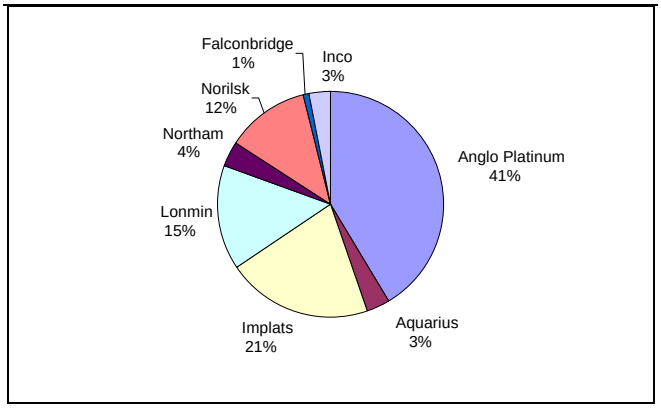
JM's platinum update released in February (www.platinum.matthey.com) confirmed that Chinese jewellery demand in late 2004 was surprisingly positive. JM had forecast a 20% year-on-year decrease in demand in 2004, but import data for platinum into Hong Kong and volume sold on the Shanghai Futures exchange support a less pessimistic view according to JM. JM will update its detailed supply/demand forecasts on May 16, 2005.

We now expect a balanced market, rather than a surplus

The return of Chinese jewellery demand, even at current platinum group metals (PGM) prices, has been a positive surprise, while industrial demand (autocatalyst) continues unabated and will support higher prices for longer, in our view.

Exhibit 75

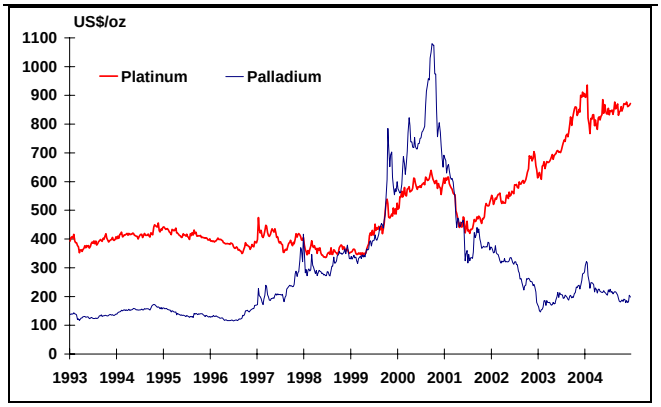
Platinum is One of the Most Consolidated Commodities (2004)



Source: Company data, Morgan Stanley Research

Exhibit 76

Platinum and Palladium Price Differentials Widens



Source: Datastream

Exhibit 77

Global Platinum Supply and Demand Model, 2000-08e

('000 oz)	2000	2001	2002	2003	2004	2005e	2006e	2007e	2008e	5 yr Av Growth %
Supply										
South Africa	**3,800**	**4,100**	**4,450**	**4,670**	**5,166**	**5,324**	**5,858**	**6,267**	**6,465**	**6.7**
Anglo Platinum	2,109	2,109	2,276	2,327	2,454	2,567	2,895	3,100	3,255	6.5
Aquarius	100	100	134	133	177	217	237	277	320	18.8
Implats	1,019	1,019	1,070	1,147	1,273	1,290	1,411	1,500	1,500	6.7
Lonmin	610	659	757	933	943	930	980	1,060	1,060	8.3
Northam	168	168	178	179	220	220	235	230	230	6.9
Zimasco	15	15	15	59	20	20	20	20	20	5.9
Zimplats			61	80	80	80	80	80	80	
Russia	**1,100**	**1,300**	**980**	**1,050**	**894**	**874**	**919**	**924**	**925**	**-2.5**
Norilsk	750	780	760	840	744	744	789	794	795	
North America	**329**	**360**	**395**	**295**	**386**	**421**	**421**	**421**	**421**	**7.4**
Other (By Products)	61	100	145	225	89	118	120	150	250	
Total (Mine) Supply	**5,290**	**5,860**	**5,970**	**6,240**	**6,535**	**6,737**	**7,319**	**7,762**	**8,061**	**5.3**
YoY (%)	*9*	*11*	*2*	*5*	*5*	*3*	*9*	*6*	*4*	
Demand										
Autocatalyst (Incl of recovery)	1,420	2,520	2640	3190	3509	3649	3832	4043	4265	5.5
Chemical	295	290	325	310	318	326	334	342	351	3
Electrical	455	385	340	340	348	356	364	372	381	2
Glass	255	290	255	175	189	203	219	236	255	8
Investment - small	40	50	45	30	31	32	34	35	36	4.0
Investment - large	(100)	30	35	-15	40	55	65	65	65	
Jewellery	2830	2590	2450	2440	2074	2136	2264	2400	2544	6.0
Petroleum	110	130	140	150	145	107	110	110	110	
Other	375	465	495	545	561	578	596	613	632	3.0
Total Demand	**5,680**	**6,220**	**6,155**	**6,520**	**6,543**	**6,758**	**7,103**	**7,473**	**7,863**	**3.8**
YoY Growth (%)	*2*	*10*	*-1*	*6*	*0*	*3*	*5*	*5*	*5*	
Draw on Swiss Stocks			558							
Stock Movement	(390)	(370)	(12)	(280)	(7)	(20)	215	289	198	
Price (US$/Ounce)	**544**	**532**	**540**	**679**	**846**	**860**	**781**	**680**	**600**	

('000 oz)	2000	2001	2002	2003	2004	2005e	2006e	2007e	2008e	5 yr Av Growth
Supply										
South Africa	3,800	4,100	4,450	4,670	5,166	5,324	5,858	6,267	6,465	
Russia	1,100	1,300	980	1,050	894	874	919	924	925	
North America	285	350	395	295	386	421	421	421	421	
Others	105	110	145	225	89	118	120	150	250	
Total Supply	**5,290**	**5,860**	**5,970**	**6,240**	**6,535**	**6,737**	**7,319**	**7,762**	**8,061**	**4.5**
YoY (%)	*9*	*11*	*2*	*5*	*5*	*3*	*9*	*6*		
Demand										
Europe	1,150	1,510	1,690	1,770	1,586	1,638	1,722	1,811	1,906	
Japan	1,410	1,310	1,420	1,315	1,376	1,421	1,494	1,571	1,653	
North America	1,225	1,295	1,085	1,285	1,360	1,405	1,477	1,553	1,635	
Rest of the World	1,895	2,115	2,345	2,150	2,221	2,294	2,411	2,537	2,669	
	5,680	6,230	6,540	6,520	6,543	6,758	7,103	7,473	7,863	
Total Demand	**5,680**	**6,230**	**6,540**	**6,520**	**6,543**	**6,758**	**7,103**	**7,473**	**7,863**	**2.7**
Stocking/Destocking			(558)	-	-	-	-	-	-	
YoY (%)	*2*	*10*	*5*	*0*	*0*	*3*	*5*	*5*	*5*	
Deficit/Surplus	(390)	(370)	(12)	(280)	(7)	(20)	215	289	198	

e = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Seaborne Traded Thermal Coal — Tightness Should Ease

Having revisited the fundamental drivers of the seaborne traded thermal coal industry, we believe that supply/demand tightness in the global market will ease in 2005. We expect Chinese exports to reach 80mt in 2005 and production from Colombia and Indonesia to continue to grow. In the second half of 2004, spot coal prices eased from their highs of US$70/t in mid-2004 to US$50/t. We continue to believe that 2005 export pricing will remain at well above mid-cycle levels owing to port infrastructure bottlenecks and robust demand, especially in the US and Asia, but that we are reaching a turning point in pricing momentum. Term settlements in 2005 will represent the top of the price cycle, in our view, before tight supply conditions begin to ease as new export capacity becomes available. We see contract prices declining by 13% in 2006.

Key drivers of supply in 2005

- Chinese exports to fall 10% YoY.
- Infrastructure bottlenecks remain in Australia and South Africa.
- Increasing production from Indonesia and Colombia, with combined capacity of over 170mt pa.
- Record high bulk freight rates have regionalised the thermal coal market.

Key drivers of demand

- Competing energy sources, US and European gas, oil and uranium prices remain at cyclically high levels.
- Growth in US coal imports has surpassed our expectations.
- The northern hemisphere winter has been relatively mild.
- Low water levels in the river Rhine reduced barging capacity and European coal demand in the fourth quarter of 2004.

Contract thermal coal price to fall in 2006

We see the annual contract price settlement as the key focus and are maintaining our forecast of US$53/tonne for JFY2005 (Japanese fiscal year) — a 33% increase from US$40/t in JFY2004. Australian thermal coal exporters have settled JFY2005 pricing contracts with Asian utilities at US$53/t. China and Indonesia remain the two key supply swing factors, in our view, with exports continuing to grow strongly from the latter. We forecast Chinese exports of 80mt in 2005, but the positive demand driver is now coming from increasing US imports. As for Indonesia, we see production growing from 106mt in 2004 to 149mt in 2008. As a result of increased supply in 2006, we forecast the contract pricing market to fall by 13% to US$46/t in 2006, from US$53/t in 2005.

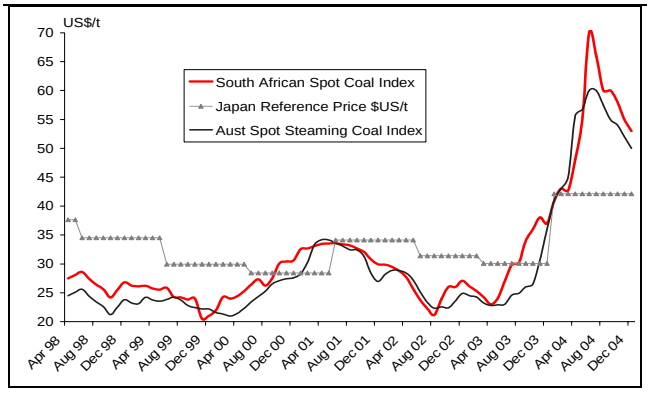
Morgan Stanley European coal traders report that coal inventory levels in the power utilities are relatively high. In addition, low water levels in the Rhine have limited the ability to transport coal to generators by barge, hence buying was more restrained in October and November. In recent months, the US has surprised markets with increased growth in thermal coal imports driven by a high domestic gas price, rail bottlenecks and increasing low cost coal supply from Colombia.

Top six producers control 35% of market

We forecast the global seaborne traded market in thermal coal to be 500mt in 2004, with the top six producers controlling 34.6%, or 174mt, of the market. The top producers of thermal coal are Xstrata and BHP Billiton with 7.3% each, Anglo American with 6.5%, PT Bumi with 6.3%, Rio Tinto with 4.1% and Drummond with 3.1%

Exhibit 78

Australian/South African Thermal Coal Prices Fell Sharply from a Q3 2004 Peak



Source: Global Coal, Morgan Stanley Research

(see Exhibit 80). This is considerably less consolidated than the coking coal market, where the top five producers control 61% of the market.

Cost pressures rise

Xstrata and other producers have highlighted a growing issue of increasing operating costs. Costs are rising across the Australian and South African businesses at a faster rate than inflation. The pressure is coming from increased royalties in New South Wales, rising fuel costs, high steel costs (resulting in a shortage of mobile equipment) and a lack of technical expertise in Australia, resulting in wage inflation.

Chinese exports to be maintained at 80mt in 2005

The Chinese National Development Reform Commission announced that it would issue 80mt of licences for 2005. This is higher than we had forecast in early 2004. We believe the risks on the supply side are significant, with Chinese exports and rising Indonesian and Colombian volumes the key drivers.

Seaborne production to grow by 4.9% CAGR to 2008

We forecast that global seaborne traded thermal coal will rise to 600mt by 2008 from 500mt in 2004, an increase of 20% (with a CAGR of 4.9%). Xstrata, one of the world largest producers, forecasts its production of total managed coal (coking and thermal) will rise to 78mt in 2005 from 72mt in 2004. The company forecasts the bulk of production, NSW thermal, at 42mt in 2005. This is about 5% higher than our assumptions. Further production growth is dependent upon a decision to accelerate Rolleston production from 8mt to 12mt per year.

Exhibit 79

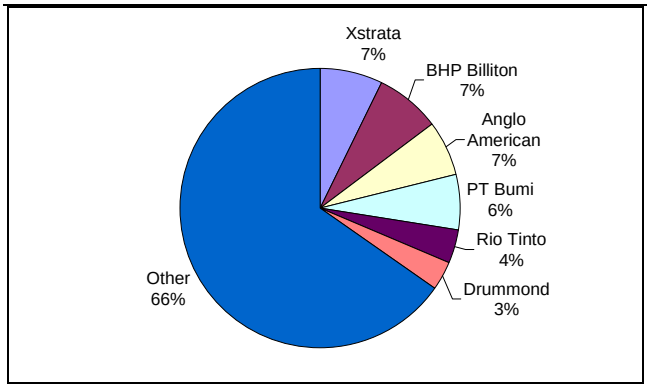
Contract Steaming Forecasts

Commodity		Spot	2004	2005e	2006e	2007e	(or LT)
Steam Coal	US$/t	53.00	40.00	53.00	46.00	42.00	36.00
Oil (WTI)	US$/bbl	47.32	41.09	37.00	35.00	36.00	32.00

Spot price as of 31 March 2005
e = Morgan Stanley Research estimates
Source: Global Coal, Morgan Stanley Research

Exhibit 80

Seaborne Thermal Coal Market Relatively Fragmented (2004)



Source: Company data, Morgan Stanley Research

Exhibit 81

Global Seaborne Coal Port Capacity Profile

Year/Mt	2004	2005e	2006e	2007e	2008e
Australia					
Newcastle	80	84	90	90	102
Dalrympyle Bay	55	56	68	68	80
Gladstone	45	47	55	55	62
Abbot Pt	13	15	15	18	20
Sth Africa (Richards Bay)	67	72	80	82	82
Indonesia	106	115	125	137	149
Poland	11	9	7	5	3
China	88	80	70	65	61
Colombia	50	55	61	67	73
Russia	40	41	42	43	44
Vietnam	15	20	20	22	20
Total Additions	**34**	**24**	**31**	**27**	**45**
% of capacity	*6*	*4*	*5*	*4*	*6*

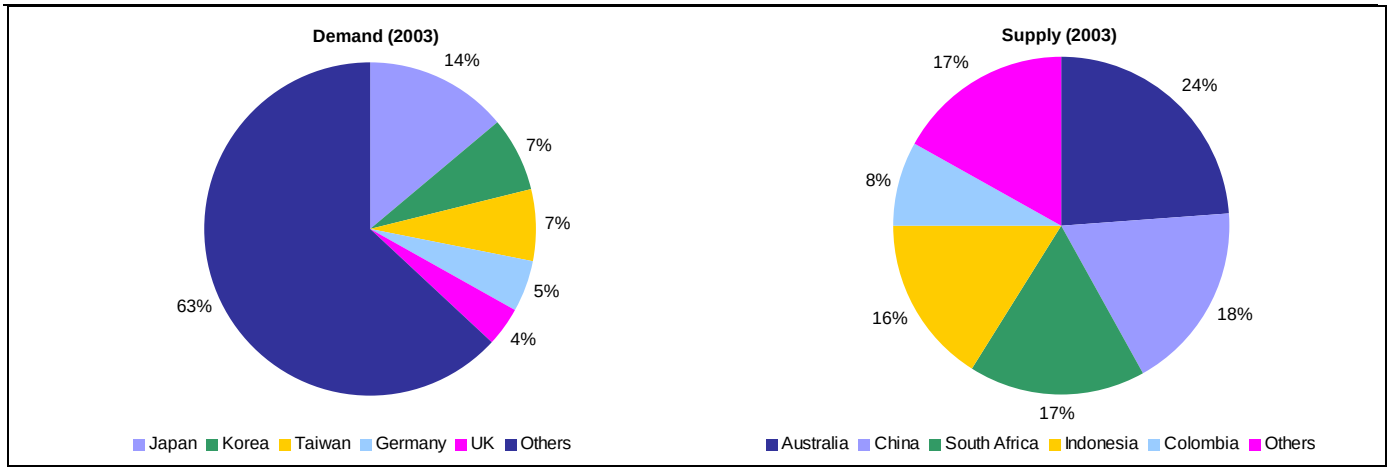
e = Morgan Stanley Research estimates

Source: Xstrata, McCloskey Coal, Morgan Stanley Research

Please see analyst certification and other important disclosures starting on page 57.

Exhibit 82

Seaborne Thermal Coal Supply and Demand in 2003



Source: Anglo American, Morgan Stanley Research

Demand growth at 4.8% CAGR to 2008

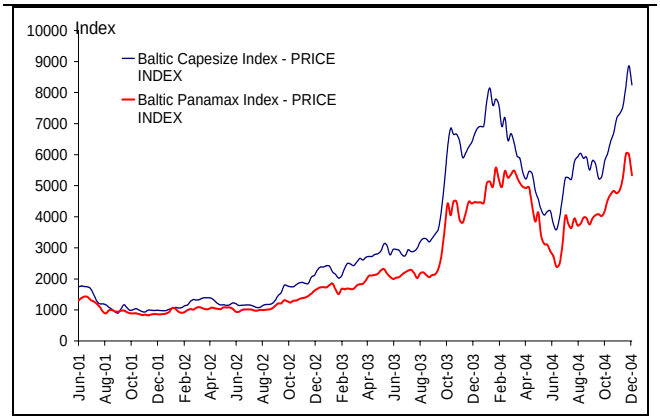
We expect demand for seaborne traded thermal coal to continue to grow strongly, but this will largely be met by growing supply in the near term. We expect Chinese exports to decline modestly as domestic demand for coal remains strong. In 2005, we expect seaborne thermal coal imports to increase by 4% to 526mt. We forecast seaborne demand for thermal coal to increase at 4.8% CAGR (2004 to 2008). We expect the market to return to balance this year. Risks to our forecast include further demand growth in South East Asia and India, which could result in a supply-side deficit being deeper and longer than we expect. The long-term demand drivers look positive for thermal coal. Exhibit 84 shows that the IEA projects that world electricity production will be underpinned by low cost coal in the future.

Coal still to be the single largest source of energy

The International Energy Agency (IEA) forecasts that world electricity will be generated from fossil fuel over the next 25 years. Coal is still expected to maintain its position as the single largest source of energy, despite the growth in renewable sources and gas.

Exhibit 83

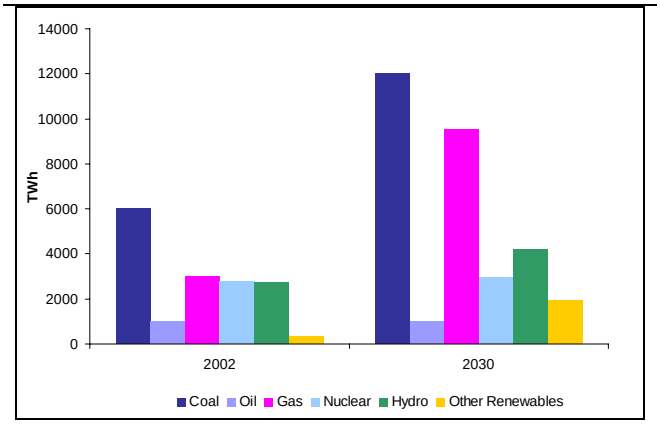
We Expect High Bulk Freight Rates, Which Have Regionalised the Thermal Coal Market, to Continue



Source: Datastream

Exhibit 84

World Electricity Generation by Fuel 2002-30



Source: IEA estimates

Please see analyst certification and other important disclosures starting on page 57.

Developing nations to drive electricity demand

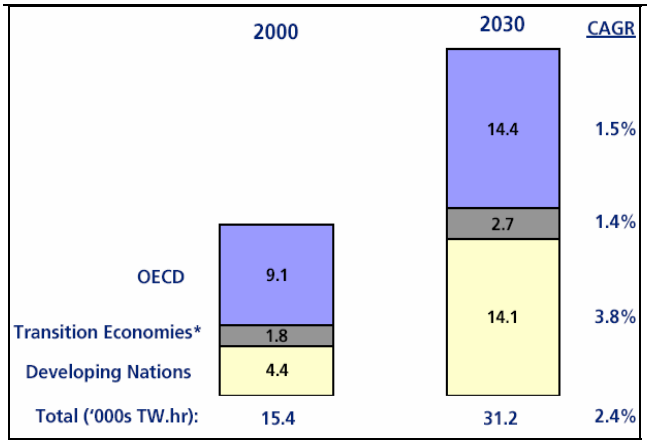
According to the IEA, developing nations such as China and India will drive world electricity generation over the next 26 years. Generation capacity is expected to grow at a CAGR of 3.8% in developing nations from 4,400 Tega watt hours (Twh) in 2000 to 14,100 Twh by 2030. By comparison, OECD electricity generation is expected to grow from 9,100 Twh to 14,400 Twh over the same period. China is a key driver of coal demand, as coal accounts for 68% of electricity generation.

Coal-fired power stations still cheaper to build and operate than other fuels

In a recent presentation, Xstrata Coal highlighted that it is still cheaper to build and operate coal-fired power stations in Europe than gas-fired (see Exhibit 86). Exhibit 87 highlights that the rise in seaborne traded coal prices on an indexed basis is broadly in line with its other competing fuels such as oil, uranium (for nuclear) and gas.

Exhibit 85

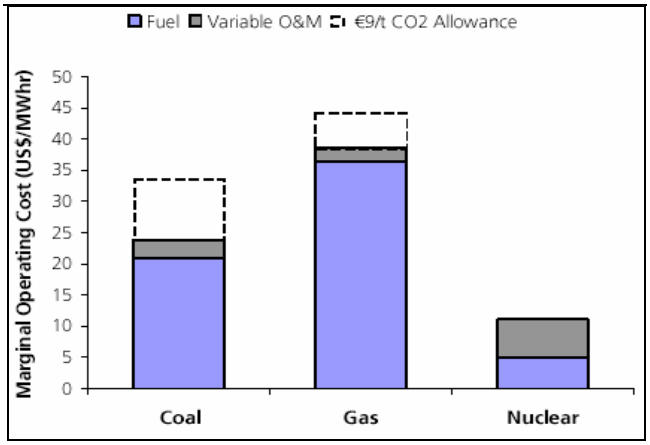
Global Electricity Generation by Region to 2030 ('000 Twh)



Source: IEA estimates to 2030

Exhibit 87

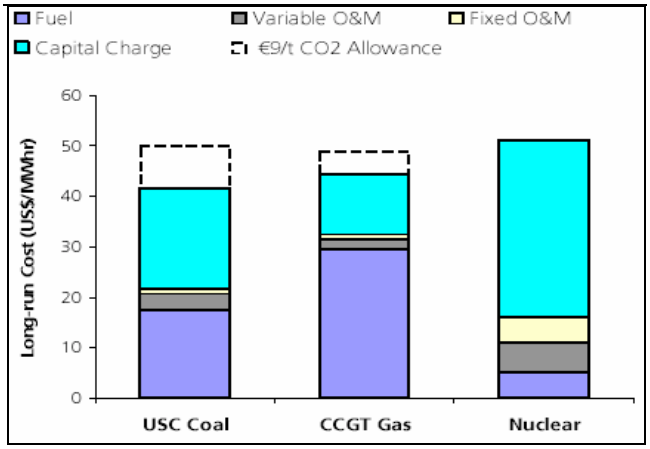
Existing European Power Plants in Dispatch



Source: Xstrata

Exhibit 86

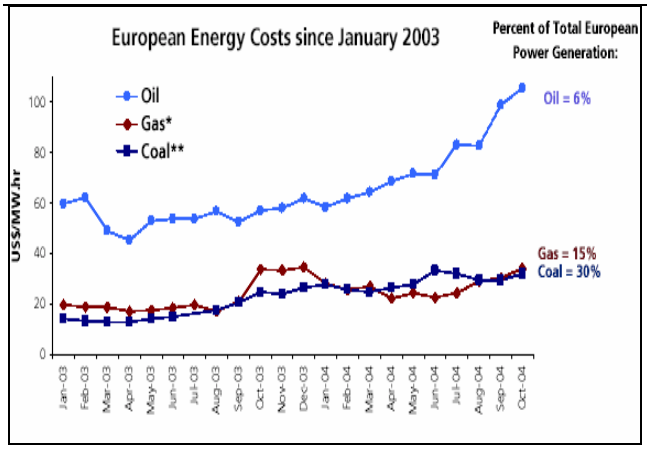
New Power Plant Build in Europe



Source: Xstrata

Exhibit 88

European Energy Costs: High Coal Use Reflects Relatively Stable and Low Pricing



Source: Xstrata

Exhibit 89

Global Seaborne Traded Coal Supply/Demand

Year Mt	1996	1997	1998	1999	2000	2001	2002	2003	2004e	2005e	2006e	2007e	2008e
Imports													
Japan	60.8	64.1	68.9	74.1	80.6	92.4	94.4	99.1	106.1	109.2	113.6	118.2	122.9
South Korea	28.6	32.3	34.2	35.4	41.3	45.9	49.2	50.7	54.7	56.9	59.2	61.6	64.0
Taiwan	26.7	30.4	30.1	32.7	38.8	41.2	43.7	46.8	50.0	52.0	54.1	56.3	58.5
India	0.4	3.9	5.4	10.4	9.9	7.7	7.9	9.1	10.4	12.0	13.8	15.9	18.3
Other Asia	29.8	27.6	30.7	32.5	37	42.3	53	56.7	60.1	63.1	66.3	69.6	73.1
Total Asia	**146.3**	**158.3**	**169.3**	**185.1**	**207.6**	**229.5**	**248.2**	**262.4**	**281.4**	**293.3**	**307.0**	**321.5**	**336.8**
Europe													
Germany	14.2	17.5	18.5	18.8	17.7	24	22.0	22.4	23.1	24.0	24.8	25.5	26.3
Russia	22	20.4	21.5	15.8	25.3	21.2	21.0	22.9	25.0	27.2	29.6	32.3	35.2
UK	9.6	11.7	12.6	12.7	13.7	27.6	21.1	21.5	22.0	22.4	22.8	23.3	23.8
Spain	8.7	7.6	10.6	16.6	17.7	13.3	14.0	15.4	16.9	18.6	20.5	22.5	24.8
Other	94.7	93.8	92	84.8	82	87.2	82	83.6	85.3	87.0	88.8	90.5	92.3
Total Europe	**149.2**	**151**	**155.2**	**148.7**	**156.4**	**173.3**	**160.1**	**165.9**	**172.3**	**179.3**	**186.5**	**194.2**	**202.4**
North America	13	16.6	20	20	25.6	31.2	29.3	39.0	41.0	43.4	45.6	47.9	50.2
South America	4.2	5.1	5.3	6	7.9	2.9	3.7	4.1	4.5	4.9	5.4	6.0	6.6
Africa	4	4.4	3.7	3.3	3.4	4.3	4.1	4.3	4.5	4.7	5.0	5.2	5.5
Oceania	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Imports	**316.9**	**335.6**	**353.8**	**363.3**	**401.1**	**441**	**446**	**476**	**504**	**526**	**550**	**575**	**602**
YoY Growth (%)	**6**	**6**	**5**	**3**	**10**	**10**	**1**	**7**	**6**	**4**	**5**	**5**	**5**
Growth Drivers													
Asia													
- Japan	6	5	7	8	9	15	3	5	7	3	4	4	4
- South Korea	7	13	6	4	17	11	3	3	8	4	4	4	4
- Taiwan	11	14	-1	9	19	6	7	7	7	4	4	4	4
- India	0	875	38	93	-5	-22	10	15	15	15	15	15	15
- Other Asia	9	-7	11	6	14	14	3	7	6	5	5	5	5
Total Asia	**8**	**8**	**7**	**9**	**12**	**11**	**8**	**6**	**7**	**4**	**5**	**5**	**5**
Europe													
- Germany	4	23	6	2	-6	36	2	2	3	4	3	3	3
- Russia	-3	-7	5	-27	60	-16	9	9	9	9	9	9	9
- UK	5	22	8	1	8	101	2	2	2	2	2	2	2
- Spain	-15	-13	39	57	7	-25	10	10	10	10	10	10	10
- Other	6	-1	-2	-8	-3	6	2	2	2	2	2	2	2
Total Europe	**3**	**1**	**3**	**-4**	**5**	**11**	**-8**	**4**	**4**	**4**	**4**	**4**	**4**
North America	**11**	**28**	**20**	**0**	**28**	**22**	**5**	**5**	**5**	**6**	**5**	**5**	**5**
Exports													
Australia	63.6	73.6	83	79.2	89.4	90.2	100	105	105	115	125	132	147
United States	34	28	27.2	23.9	23.2	19.9	16	19	19	18	18	17	17
South Africa	55.8	59.4	61.9	63.9	67.5	68	67	69	67	72	80	82	82
Indonesia	33.4	38.4	44.1	50.6	52.9	54.5	71	86	106	115	125	137	149
Canada	5.7	6.4	5.8	4.9	3.9	4	1	1	1	1	1	1	1
Poland	19	20.3	21.5	17.5	18	18	19	18	11	9	7	5	3
China	24.4	26.1	27.2	32.2	48.2	79.4	73	82	88	80	70	65	61
Colombia	18.9	24.4	26.8	28.7	29.3	33.9	32	42	50	55	61	67	73
Russia	17	16.7	13.8	20.4	27	33	33	37	38	39	40	43	44
Vietnam	3.3	3.4	3	3.3	3.04	4.2	5	10	13	20	20	22	20
Other	33.6	33	39.4	40.9	45.56	44.3	30	5	1	3	3	3	3
Total	**308.7**	**329.7**	**353.7**	**365.5**	**408**	**449.4**	**446**	**473**	**499**	**527**	**549**	**574**	**601**
Annual Increase	**34.2**	**21**	**24**	**11.8**	**42.5**	**41.4**	**-3**	**26**	**26**	**28**	**22**	**25**	**27**
% Annual Increase	**12**	**7**	**7**	**3**	**12**	**10**	**-1**	**6**	**6**	**5.5**	**4**	**4**	**5**
Surplus/(Deficit)	8.2	5.9	0.1	(2.2)	(6.9)	8	1	(3)	(5)	1	(1)	(1)	(1)
Contract Price US$/t	40.3	37.7	34.5	30.0	28.5	34.2	31.4	28.3	40.0	53.0	46.0	42.0	36.0

e = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

We expect the thermal coal market to move into balance in 2005.

We forecast Chinese thermal coal exports of 80mt in 2005.

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