Deutsche Bank
Markets Research

Europe
United Kingdom
Metals & Mining

Industry
2Q16 Commodity Outlook

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Recommendation Change

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We interrupt this rally to bring you...fundamentals

Sector fully priced for now; prefer Rio over BHP, Glencore over Anglo

The rally year to date reflects a rotation into sectors benefiting from a weaker US dollar, Chinese stimulus and the oil price rebound more than it reflects the slowly improving fundamentals - and we think each of these positives is now priced in. The sector has re-rated to a P/NPV of 0.86x, in line with the average trough multiple since 2003. It's the same for earnings multiples, where we now forecast a sector 2017e PE of 30x, well above the average trough PE of 9x, and the 17x of the most recent low in May 2015. We prefer Rio at 0.76x P/NPV compared with BHP at 0.92x. We have downgraded Glencore to Hold (0.8x NPV), but prefer it to Anglo (0.6x) given deleveraging progress.

FCF now healthy across the sector and gearing coming down

The 1Q16 commodity price recovery, with the oil price and producer currency weakness early in the quarter, plus continued 'self-help', has boosted free cash flow across the sector. 17 of the 19 companies under our coverage are now producing free cash flow after dividends in 2017. FCF yields average 10% for the big four diversified miners and 8.4% for the whole sector next year. Gearing is also reducing: we forecast a drop from 26% in 2015, to 22% in 2016 and 16% in 2017.

Lots for sale, lots of window shopping, no real buying…yet

A few companies are starting to use their balance sheets in selective M&A, but for rich multiples which are too high for most to justify when downwards pressure on long-term commodity prices prevails: today we have cut our LT copper price by 7% to USc300/lb and our LT iron ore price by 14% to US$57/t. There is a lot of window shopping going on, but valuations have run hard very quickly and we think both buyers and quality "for sale" assets remain scarce.

Zinc up, nickel down; iron ore hit hardest; still positive on precious

Our commodity team has made mixed adjustments to its base metals price forecasts increasing zinc price estimates by 3% in both 2016 and 2017, but lowering nickel by 7% and 13%. Bulk commodities are hit harder with iron ore down an average 11% per year from 2016-2020. Precious metals are revised upwards, for the PGMs due to Rand strength, with platinum forecasts up 9% in 2016, and silver up 6% in 2016 and 3% in 2017.

We have downgraded Glencore, Kaz and S32 to Hold, Vedanta up to Hold

Our top picks are Rio Tinto, Boliden and Acacia. We maintain Sell on Fresnillo and Lonmin. Each of the stocks we have downgraded is trading at 0.8x NPV or above, which we think represents a full valuation. Vedanta's valuation is more attractive at 0.7x now that zinc and oil have recovered.

This report changes recommendations, price targets and estimates for several companies under our coverage. Please see page 7 for details.

Transfer of coverage

With this report we transfer coverage of the following stocks from Rob Clifford to Anna Mulholland with immediate effect: BOL.ST, FXPO.L, GLEN.L, KAZ.L, NHY.OL, NYR.BR, and RIO.L.

Key Changes

Company	Target Price	Rating
AAL.L	500.00 to 515.00(GBP)	-
ACAA.L	350.00 to 340.00(GBP)	-
ANTO.L	510.00 to 450.00(GBP)	-
BLT.L	950.00 to 900.00(GBP)	-
BOL.ST	180.00 to 165.00(SEK)	-
FRES.L	750.00 to 790.00(GBP)	-
FXPO.L	120.00 to 110.00(GBP)	-
GLEN.L	138.00 to 160.00(GBP)	Buy to Hold
KAZ.L	197.00 to 170.00(GBP)	Buy to Hold
LMI.L	42.00 to 45.00(GBP)	-
NHY.OL	34.00 to 33.00(NOK)	-
NORDNq.L	3.50 to 3.70(USD)	-
POLYP.L	550.00 to 560.00(GBP)	-
RIO.L	3,300.00 to 3,000.00(GBP)	-
S32.L	84.00 to 80.00(GBP)	Buy to Hold
VED.L	185.00 to 260.00(GBP)	Sell to Hold

Source: Deutsche Bank

Top picks

Acacia Mining plc (ACAA.L),GBP270.00	Buy
Rio Tinto (RIO.L),GBP2,014.00	Buy
Boliden AB (BOL.ST),SEK132.50	Buy

Source: Deutsche Bank

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Re-rating done for now

FCF yields robust but fully priced

The sector is now self-funding and gearing is coming down

The 1Q16 commodity price recovery, with the oil price and producer currency weakness early in the quarter, plus continued 'self-help', has boosted free cash flow across the sector. 17 of the 19 companies under our coverage are now producing free cash flow after dividends in 2017. FCF yields average 10% for the big four diversified miners and 8.4% for the whole sector next year. Gearing is also reducing: looking at net debt/equity, we forecast a drop from 26% in 2015, to 22% in 2016 and 16% in 2017.

Figure 1: We are well above Trough PE and P/NPV

	P/E - current year	P/E - one year forward	P/NPV
Today	**35.4**	**29.9**	**0.91**
Average of trough multiples shown below	**11.8**	**9.0**	**0.83**
Jan-16	19.3	10.2	0.60
May-15	22.6	16.8	0.81
Jul-13	14.1	11.1	0.72
Jul-12	13.1	10.4	0.74
Oct-11	8.4	6.4	0.65
Mar-11	8.1	6.2	0.87
Jul-10	8.7	6.0	0.72
Feb-10	10.2	7.4	0.84
Dec-08	6.2	5.6	0.58
Jan-08	9.8	9.2	1.03
Aug-07	9.6	8.5	1.09
May-05	9.8	8.6	1.01
May-04	11.2	8.4	0.93
May-03	14.2	11.8	0.97

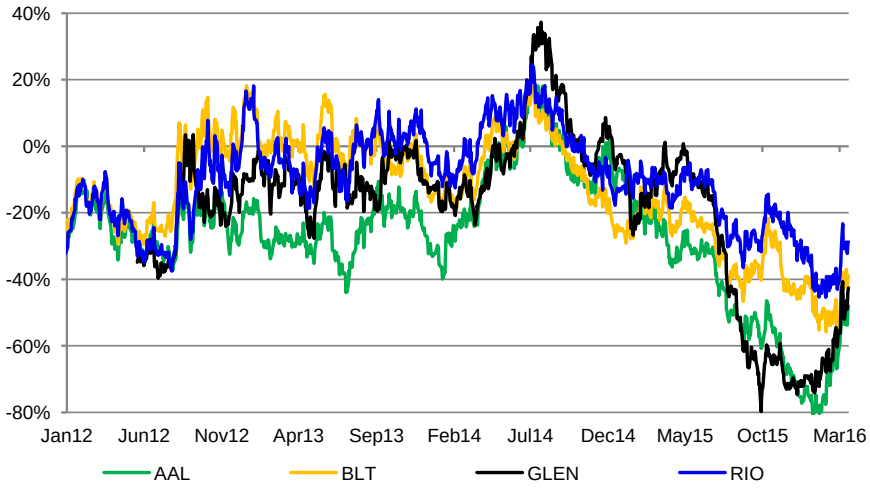
Source: Deutsche Bank estimates

We still prefer stronger balance sheets and effective plans

Stability first half, M&A second

As we progressed through the back half of 2015, one performance differential was very clear – those miners with better balance sheets outperformed those with stretched balance sheets. We have also started to see a second theme emerge, with the outperformance of those companies with well articulated and effective strategies. Some of this discrimination is evident in the performance of the four UK diversified miners shown in the chart below. It shows the rolling 12 month share price performance – BHP and Rio Tinto with the more robust balance sheets have significantly outperformed. Of note, the best performer is Rio Tinto with its simple, well articulated and executed strategy.

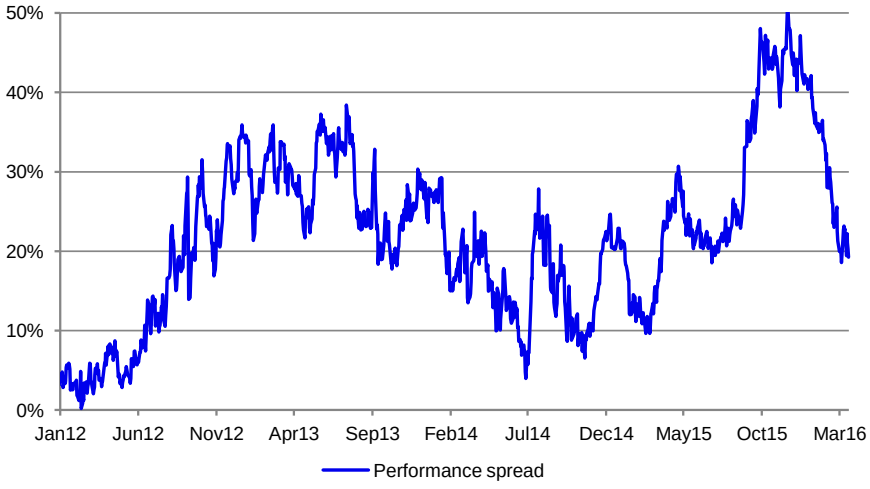
Figure 2: Rolling 12 month performance of the 4 UK diversifieds.



Source: Deutsche Bank, DataStream

However, to be clichéd, a rising tide has lifted all ships and the performance spread between the big four mining stocks has pulled back from a high of 50% in late 2015 to around 20%:

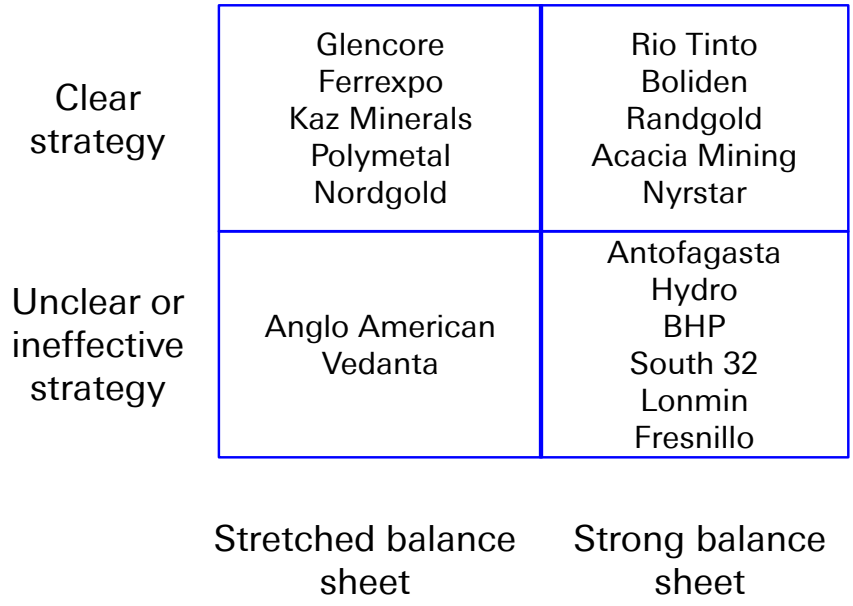
Figure 3: Performance spread between the best and worst performance of the four diversified miners



Source: Deutsche Bank, DataStream

We think that the wind will come out of the commodity price rally as we move through the rest of this year, and the currency and oil tailwinds have softened as well. As such, we reiterate our simple investment framework which splits the sector into those companies with strong balance sheets and those with stretched balance sheets, and then also separates the companies by strategic clarity and performance. For this, we have a simple matrix as shown in the figure below. We think those companies in the top right of the matrix are more likely to trade in line with their fundamental valuations.

Figure 4: 2016 performance framework



Source: Deutsche Bank

We see value in companies trading below at 0.80x NPV or below

While the above framework is conceptual, we apply a more specific template to our stocks and valuations to set our price targets. Over time, the miners trade in a range between 0.5x and 1.2x NPV and we apply this range across our stocks based on a ranking measured by balance sheet and performance measures. Specifically, we ranked the companies under our coverage by the following measures:

- Absolute debt levels as measured by end 2015 balance sheet gearing (net debt to net debt plus equity). When the M&A cycle kicks off, this measure will be less relevant, but is important at the moment;
- Improving debt levels as measured by the change in net debt in 2016 as a percentage of shareholders equity. This is also really a free cash flow measure;
- 2016 earnings level as measured by the forecast 2016 PE;
- 2016 earnings growth;
- Company strategy performance. This is a binary measure with a forced deviation from the stated dividend policy or a forced equity raising indicating a failure or lack of robustness of the corporate strategy.

The table below shows the outcomes of these for our stock coverage and the resulting modifier to our NPVs for price target setting purposes.

Figure 5: Performance modifiers to NPV for price target setting

	2015 Gearing (ND/(ND+Eq))	Change in debt in 2016 as a % of equity	2016 PE	2016 earnings growth	Forced Dividend policy change or rights issue	Combined ranking	P/NPV multiple for TP	Previous ranking
Boliden	14%	-10%	10.3	21%	No	1	1.20	1
Ferrexpo	79%	-20%	4.7	-9%	No	2	1.16	5
Antofagasta	1%	3%	49.8	2922%	No	3	1.12	4
Randgold	-6%	-1%	53.9	7%	No	4	1.04	5
Polymetal	62%	-5%	17.2	42%	No	5	1.04	8
Norsk Hydro	-3%	5%	19.8	-46%	No	6	1.01	8
Fresnillo	14%	6%	52.4	207%	No	7	1.01	10
South32	1%	-4%	-ve	-15%	No	8	0.93	15
Acacia Mining	-7%	1%	29.4	-1656%	No	9	0.89	2
Aquarius	-24%	1%	-ve	-83%	No	10	0.85	7
Rio Tinto	22%	-2%	13.0	-32%	Yes	11	0.81	3
Glencore	35%	-11%	21.8	-60%	Yes	12	0.77	14
BHP Billiton	30%	-8%	22.2	-40%	Yes	13	0.77	10
Lonmin	11%	-14%	-ve	-84%	Yes	14	0.69	16
Vedanta	37%	-7%	-ve	8%	Yes	15	0.66	17
Anglo American	37%	2%	47.4	-12%	Yes	16	0.62	18
KAZ Minerals	53%	21%	15.3	-625%	No	17	0.54	12
Nordgold	28%	43%	-ve	-32%	No	18	0.58	19
Nyrstar	53%	14%	4.6	-110%	Yes	19	0.50	13

Source: Deutsche Bank

As shown in the coloured column in the table above, since we ran the above analysis and ranking in December 2015, the main changes have been an improvement in Boliden, Ferrexpo, Antofagasta, Hydro, South32 and the gold mining stocks. The other stocks have seen earnings growth suffer as we mark down our 2H16 price forecasts for iron ore, nickel, and coal, and strengthened our currency forecasts (AUD, ZAR).

Earnings changes

Figure 6: European miner financial year earnings estimates and target price revisions

			Rec	Target	2015	2016E	2017E	2018E
Acacia Mining	(US¢)	Prev	Buy	350	-2	27	35	35
		New	Buy	340	-2	27	35	35
		% change		-2.9%	0.0%	0.7%	0.2%	-0.3%
Antofagasta	(US¢)	Prev	Hold	510	1	16	33	67
		New	Hold	450	1	17	33	62
		% change		-11.8%	0.0%	7.7%	0.0%	-7.1%
Anglo American	(US¢)	Prev	Hold	500	64	44	105	179
		New	Hold	515	64	56	96	161
		% change		3.0%	0.0%	29.1%	-8.0%	-9.9%
Aquarius	(US¢)	Prev	Buy	14	-3	-8	-1	-0.1
		New	Buy	14	-3	-1	-1	-0.5
		% change		0.0%	0.0%	92.3%	31.7%	-262.2%
BHP Billiton	(US¢)	Prev	Hold	950	162	18	61	123
		New	Hold	900	162	18	40	96
		% change		-5.3%	0.0%	-3.2%	-35.1%	-22.2%
Boliden	(SEK)	Prev	Buy	180	9.7	14.9	23.2	20.3
		New	Buy	165	9.7	11.7	18.5	17.0
		% change		-8.3%	0.0%	-21.5%	-20.2%	-16.0%
Ferrexpo	(US¢)	Prev	Buy	120	24	21	18	23
		New	Buy	110	24	22	16	22
		% change		-8.3%	0.0%	3.6%	-10.6%	-7.9%
Fresnillo	(US¢)	Prev	Sell	750	7	20	33	38
		New	Sell	790	7	21	38	43
		% change		5.3%	0.0%	4.9%	15.1%	14.3%
Glencore	(US¢)	Prev	Buy	138.0	10.3	4.5	7.4	16.4
		New	Hold	160.0	10.3	4.1	6.7	16.6
		% change	Rating Changed	3.6%	0.3%	-9.0%	-9.3%	1.4%
Kaz Minerals	(US¢)	Prev	Buy	197	-2	10	27	19
		New	Hold	170	-2	12	32	20
		% change	Rating Changed	-13.7%	0.0%	26.2%	18.6%	10.0%
Lonmin	(US¢)	Prev	Sell	42	-16	-1	8	15
		New	Sell	45	-16	-3	5	15
		% change		7.1%	0.0%	-295.8%	-35.2%	-3.8%
Nordgold	(US¢)	Prev	Buy	3.50	47	26	35	51
		New	Buy	3.70	47	32	39	52
		% change		5.7%	0.0%	23.1%	13.0%	0.8%
Norsk Hydro	(NOK)	Prev	Hold	34.0	3.3	1.48	3.25	6.32
		New	Hold	33.0	3.3	1.77	2.41	5.13
		% change		-2.9%	0.0%	20.0%	-25.8%	-18.9%
Nyrstar	(€)	Prev	Hold	0.98	-0.07	0.05	0.17	0.19
		New	Hold	0.98	-0.07	0.01	0.17	0.19
		% change		0.0%	0.3%	-87.0%	-1.7%	-1.7%
Polymetal	(US¢)	Prev	Hold	550	52	69	67	74
		New	Hold	560	52	73	68	74
		% change		1.8%	0.1%	5.9%	2.3%	0.3%
Randgold	(US¢)	Prev	Hold	5630	201	226	295	373
		New	Hold	5630	201	215	290	372
		% change		0.0%	0.0%	-4.9%	-1.9%	-0.1%
Rio Tinto	(US¢)	Prev	Buy	3300	250	203	331	370
		New	Buy	3000	250	169	249	269
		% change		-9.1%	0.0%	-16.5%	-24.8%	-27.4%
South32	(US¢)	Prev	Buy	84	11	3	9	13
		New	Hold	80	11	2	4	8
		% change	Rating Changed	-4.8%	0.0%	-45.4%	-53.7%	-39.6%
Vedanta	(US¢)	Prev	Sell	185	-14	-145	-171	-113
		New	Hold	260	-14	-135	-162	-113
		% change	Rating Changed	40.5%	0.0%	6.6%	5.2%	0.1%

Source : Deutsche Bank, Company data

The UK sector valuation comparisons are shown in the table below:

Figure 7: European metals & mining valuation table (Calendar year)

				MCap	P/E			EV/EBITDA			FCF Yield			Div Yld	P/NPV
Company	**Rec**	**Price**	**Target**	**US$mn**	**2015**	**2016E**	**2017E**	**2015**	**2016E**	**2017E**	**2015**	**2016E**	**2017E**	**2016E**	**Current**
Acacia Mining plc	Buy	268	340	1,595	nm	14.5	11.1	8.4	4.7	3.7	nm	3.6	7.1	1.1	0.86
Anglo American PLC	Hold	555	515	10,400	20.2	14.3	8.4	nm	6.3	4.7	nm	nm	16.3	0.0	0.58
Antofagasta PLC	Hold	515	450	7,350	nm	44.3	22.8	16.1	10.0	8.3	nm	nm	2.8	0.8	1.10
Aquarius Platinum Ltd	Buy	14	14	291	nm	nm	nm	32.8	34.7	14.8	NM	4.3	2.6	0.0	3.51
BHP Billiton	Hold	831	900	69,722	14.0	42.0	49.4	7.5	18.6	17.8	6.2	6.6	8.9	3.7	0.92
Boliden AB	Buy	139.5	165.0	4,659	16.2	11.9	7.5	6.7	5.8	4.1	6.0	nm	10.1	2.9	1.02
Ferrexpo Plc	Buy	33	110	282	3.5	2.2	3.0	4.0	3.0	3.4	22.0	59.6	23.6	0.0	0.31
Fresnillo PLC	Sell	988	790	10,549	157.6	67.4	38.1	15.1	14.7	11.2	0.9	0.4	2.9	0.7	1.41
Glencore	Hold	161	160	33,133	31.2	56.9	35.0	8.9	6.9	6.3	17.8	11.7	7.5	5.1	0.78
KAZ Minerals PLC	Hold	180	170	1,168	nm	21.3	8.2	13.8	15.3	6.6	nm	nm	nm	0.0	0.81
Lonmin Plc	Sell	157	45	1,339	nm	nm	nm	nm	nm	11.5	nm	nm	nm	0.0	2.10
Nordgold N.V.	Buy	2.90	3.70	1,091	5.8	9.2	7.4	3.1	3.3	2.5	18.8	8.4	23.7	3.7	0.48
Norsk Hydro ASA	Hold	33.91	33.0	8,297	10.8	19.1	14.1	4.3	4.1	3.4	12.7	0.1	8.3	2.2	0.95
Nyrstar NV	Hold	0.71	0.98	671	nm	99.8	4.1	7.1	4.4	2.1	nm	nm	52.3	0.0	0.52
Polymetal International	Hold	723	560	4,429	20.3	14.3	15.4	9.3	7.6	6.7	5.5	8.1	12.5	2.1	1.55
Randgold Resources	Hold	6510	5630	8,794	34.0	44.0	32.6	18.8	19.8	15.6	2.1	1.7	1.7	0.7	1.28
Rio Tinto PLC	Buy	2015	3000	56,159	16.0	17.3	11.7	7.6	6.7	5.3	3.3	9.9	8.8	3.8	0.76
South32	Hold	82	80	6,356	nm	45.3	52.7	nm	5.1	5.1	nm	10.6	8.3	0.2	1.03
Vedanta Resources PLC	Hold	310	260	1,241	nm	nm	nm	6.2	8.4	8.2	NM	NM	NM	1.2	0.71
Weighted Average				**227,526**	**23.5**	**35.4**	**29.9**	**8.1**	**11.2**	**10.0**	**6.3**	**6.9**	**8.4**	**3.1**	**0.91**

Source: Deutsche Bank, Company data, Priced 18 MAR 2016

Commodity review

The changes to our commodity and FX assumptions are summarised in the tables below:

Figure 8: New price estimates – Base metals & Precious metals

	Unit	1Q16	2Q16	3Q16	4Q16	2015	2016	2017	2018	2019	2020
Base Metals											
Aluminium	USc/lb	69.9	70.8	69.4	69.0	75.5	69.8	72.4	77.1	81.9	86.7
Copper	USc/lb	212.1	222.3	204.2	199.6	250.1	209.6	214.4	237.0	259.6	282.2
Lead	USc/lb	79.4	81.7	78.0	78.5	81.1	79.4	82.0	87.9	93.9	99.8
Nickel	USc/lb	394.7	385.7	399.3	465.1	538.3	411.2	465.1	535.8	606.5	677.2
Tin	USc/lb	703.3	771.3	748.6	726.0	728.7	737.3	726.0	749.4	772.9	796.4
Zinc	USc/lb	76.5	80.8	79.4	78.0	87.6	78.7	82.2	88.8	95.3	101.8
Base Metals											
Aluminium	USD/t	1540	1560	1530	1520	1664	1538	1595	1700	1806	1911
Copper	USD/t	4675	4900	4500	4400	5512	4619	4725	5223	5722	6220
Lead	USD/t	1750	1800	1720	1730	1787	1750	1808	1938	2069	2199
Nickel	USD/t	8700	8500	8800	10250	11864	9063	10250	11808	13367	14925
Tin	USD/t	15500	17000	16500	16000	16061	16250	16000	16518	17035	17553
Zinc	USD/t	1685	1780	1750	1720	1931	1734	1813	1956	2100	2244
Precious metals											
Gold	USD/oz	1230	1150	1170	1230	1161	1195	1231	1275	1317	1359
Silver	USD/oz	15.5	15.0	14.9	15.2	15.7	15.2	15.8	16.5	17.5	18.5
Platinum	USD/oz	925	920	960	950	1056	939	890	1030	1250	1390
Palladium	USD/oz	525	550	600	650	692	581	658	750	900	920
Rhodium	USD/oz	670	700	720	720	953	703	724	750	850	900
Ruthenium	USD/oz	42	42	42	42	47	42	60	80	100	100

Source: Deutsche Bank

Figure 9: New price estimates – Steel making raw materials

	Unit	1Q16	2Q16	3Q16	4Q16	2015	2016	2017	2018	2019	2020
Iron ore											
CIF China fine ore	USD/t	50.0	44.0	40.0	43.0	55.6	44.3	45.8	49.1	52.4	55.7
Coking Coal											
Premium hard coking	USD/t	81.0	83.0	85.0	85.0	102.3	83.5	87.8	98.0	108.2	118.4
Standard hard coking	USD/t	70.8	72.6	74.3	74.3	89.4	73.0	76.7	85.6	94.6	103.5
Semi soft coking	USD/t	60.8	62.3	63.8	63.8	75.9	62.6	65.8	73.5	81.1	88.8
Other Bulks											
Chrome Ore	USD/t	230.00	230.00	230.00	230.00	225.00	230.0	230.0	230.0	230.0	233.5
Ferro-chrome	USc/lb	125.0	125.0	125.0	125.0	125.0	125.0	120.0	115.0	110.0	111.7
Manganese ore	USc/dmtu	2.6	2.6	2.7	2.7	3.2	2.7	2.9	3.1	3.1	3.1
Ferro-manganese	USD/t	964	964	979	979	950	971	1,001	1,037	1,026	1,012

Source: Deutsche Bank

Figure 10: New price estimates – Minor metals, Energy & Fx

	Unit	1Q16	2Q16	3Q16	4Q16	2015	2016	2017	2018	2019	2020
Minor metals											
Cobalt (99.3%)	USD/lb	13.0	13.0	12.5	12.0	13.2	12.6	12.0	13.0	11.8	10.6
Molybdenum	USD/lb	5.50	6.00	6.00	6.00	6.83	5.88	6.50	7.00	7.43	7.85
Energy											
Oil West Tex	USD/bbl	33.0	40.0	43.0	47.0	49.2	40.8	52.0	65.0	65.0	66.0
Japanese thermal coal	USD/t	67.8	58.0	58.0	58.0	71.4	60.5	53.5	54.0	55.6	57.2
Uranium (U3O8)	USD/lb	55.00	58.00	58.00	58.00	52.74	57.25	59.49	62.05	64.22	64.54
Foreign Exchange											
Euro	USD/EUR	1.10	1.07	1.01	0.97	1.11	1.04	0.90	0.93	1.05	1.10
Australia	USD/AUD	0.712	0.728	0.701	0.680	0.754	0.705	0.663	0.670	0.696	0.718
South Africa	ZAR/USD	15.97	15.49	15.92	16.36	12.85	15.93	16.77	15.38	13.36	13.11

Source: Deutsche Bank

Figure 11: Changes from previous forecast

	1Q16	2Q16	3Q16	4Q16	2015	2016	2017	2018	2019	2020
Base Metals										
Aluminium	5.84%	4.70%	0.00%	-3.80%	0.24%	1.57%	0.00%	0.00%	0.00%	0.00%
Copper	1.63%	2.08%	0.00%	0.00%	0.11%	0.96%	0.00%	-2.05%	-3.68%	-5.01%
Lead	4.17%	5.88%	0.00%	-1.14%	0.43%	2.19%	0.00%	0.00%	0.00%	0.00%
Nickel	-3.33%	-10.53%	-12.00%	-2.38%	0.03%	-7.05%	-12.77%	-9.22%	-6.31%	-3.86%
Tin	3.33%	13.33%	10.00%	6.67%	-0.16%	8.33%	0.00%	0.00%	0.00%	0.00%
Zinc	4.01%	5.95%	2.94%	0.00%	0.02%	3.20%	2.84%	2.09%	1.45%	0.90%
Precious metals										
Gold	0.0%	0.0%	0.0%	0.0%	0.03%	0.0%	0.0%	0.0%	0.0%	0.00%
Silver	4.7%	2.7%	6.4%	11.8%	0.0%	6.3%	3.3%	0.0%	0.0%	0.00%
Platinum	5.1%	9.5%	9.1%	13.8%	-1.7%	9.3%	7.1%	3.0%	0.0%	0.00%
Palladium	5.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.00%
Rhodium	3.1%	0.0%	0.0%	0.0%	0.1%	0.7%	0.0%	0.0%	0.0%	0.00%
Ruthenium	-23.6%	-23.6%	-23.6%	-23.6%	0.0%	-23.6%	0.0%	0.0%	0.0%	0.00%
Steel making raw materials										
Iron ore										
CIF China fine ore	0.0%	4.8%	-11.1%	-10.4%	-0.6%	-4.3%	-11.2%	-11.8%	-12.4%	-12.8%
Coking Coal										
Premium hard coking	-2.4%	1.2%	0.0%	0.0%	0.0%	-0.3%	-2.0%	-1.4%	-1.0%	-0.6%
Standard hard coking	-2.4%	1.2%	0.0%	0.0%	0.0%	-0.3%	-2.0%	-1.4%	-1.0%	-0.6%
Semi soft coking	-2.4%	1.2%	0.0%	0.0%	0.0%	-0.3%	-2.0%	-1.4%	-1.0%	-0.6%
Other Bulks										
Chrome Ore	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%
Ferro-chrome	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%
Manganese ore	-13.2%	-13.2%	-11.2%	-11.2%	0.0%	-12.2%	-6.7%	-3.5%	-6.0%	-15.6%
Ferro-manganese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00%
Minor metals										
Cobalt (99.3%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Molybdenum	0.00%	0.00%	0.00%	0.00%	-9.48%	0.00%	0.00%	0.00%	0.00%	0.00%
Energy										
Oil West Tex	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Japanese thermal coal	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Uranium (U3O8)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Foreign Exchange										
Euro (USD/EUR)	6.42%	10.64%	7.45%	6.01%	0.00%	7.63%	3.00%	0.00%	0.00%	0.00%
Australia (USD/AUD)	2.63%	8.63%	4.64%	6.22%	-0.03%	5.50%	10.06%	7.17%	-0.58%	-4.33%
South Africa (ZAR/USD)	-4.16%	-10.30%	-8.32%	-6.36%	-0.71%	-7.31%	-5.63%	-2.89%	0.12%	0.23%

Source: Deutsche Bank

Figure 12: Changes from previous period

	1Q16	2Q16	3Q16	4Q16	2015	2016	2017	2018	2019	2020
Base Metals										
Aluminium	3.1%	1.3%	-1.9%	-0.7%	-12.1%	-7.6%	3.7%	6.6%	6.2%	5.8%
Copper	-4.4%	4.8%	-8.2%	-2.2%	-19.5%	-16.2%	2.3%	10.5%	9.5%	8.7%
Lead	4.0%	2.9%	-4.4%	0.6%	-15.3%	-2.1%	3.3%	7.2%	6.7%	6.3%
Nickel	-7.8%	-2.3%	3.5%	16.5%	-30.0%	-23.6%	13.1%	15.2%	13.2%	11.7%
Tin	2.7%	9.7%	-2.9%	-3.0%	-26.7%	1.2%	-1.5%	3.2%	3.1%	3.0%
Zinc	4.4%	5.6%	-1.7%	-1.7%	-10.7%	-10.2%	4.5%	7.9%	7.3%	6.8%
Precious metals										
Gold	11.4%	-6.5%	1.7%	5.1%	-8.4%	3.0%	3.0%	3.6%	3.3%	3.2%
Silver	5.0%	-3.2%	-0.7%	2.0%	-17.7%	-3.6%	4.0%	4.8%	6.1%	5.7%
Platinum	1.8%	-0.5%	4.3%	-1.0%	-23.8%	-11.1%	-5.2%	15.7%	21.4%	11.2%
Palladium	-13.2%	4.8%	9.1%	8.3%	-13.9%	-16.0%	13.1%	14.1%	20.0%	2.2%
Rhodium	-8.2%	4.5%	2.9%	0.0%	-18.7%	-26.3%	3.0%	3.6%	13.3%	5.9%
Ruthenium	0.0%	0.0%	0.0%	0.0%	-27.9%	-10.2%	42.9%	33.3%	25.0%	0.0%
Steel making raw materials										
Iron ore										
CIF China fine ore	7.0%	-12.0%	-9.1%	7.5%	-42.7%	-20.5%	3.4%	7.2%	6.8%	6.3%
Coking Coal										
Premium hard coking	-9.0%	2.5%	2.4%	0.0%	-18.5%	-18.3%	5.1%	11.7%	10.4%	9.4%
Standard hard coking	-9.0%	2.5%	2.4%	0.0%	-18.5%	-18.3%	5.1%	11.7%	10.4%	9.4%
Semi soft coking	-9.0%	2.5%	2.4%	0.0%	-14.7%	-17.5%	5.1%	11.7%	10.4%	9.4%
Other Bulks										
Chrome Ore	2.2%	0.0%	0.0%	0.0%	11.8%	2.2%	0.0%	0.0%	0.0%	1.5%
Ferro-chrome	0.0%	0.0%	0.0%	0.0%	12.4%	0.0%	-4.0%	-4.2%	-4.3%	1.5%
Manganese ore	-13.3%	0.0%	3.8%	0.0%	-37.0%	-15.9%	9.4%	6.9%	0.0%	0.0%
Ferro-manganese	1.5%	0.0%	1.5%	0.0%	-16.5%	2.3%	3.0%	3.6%	-1.0%	-1.4%
Minor metals										
Cobalt (99.3%)	0.0%	0.0%	-3.8%	-4.0%	-5.6%	-4.4%	-5.0%	8.3%	-9.2%	-10.1%
Molybdenum	11.3%	9.1%	0.0%	0.0%	-41.3%	-14.0%	10.6%	7.7%	6.1%	5.7%
Energy										
Oil West Tex	-24.3%	21.2%	7.5%	9.3%	-47.1%	-17.2%	27.6%	25.0%	0.0%	1.5%
Japanese thermal coal	0.0%	-14.5%	0.0%	0.0%	-16.3%	-15.3%	-11.5%	0.9%	3.0%	2.9%
Uranium (U3O8)	0.0%	5.5%	0.0%	0.0%	7.9%	8.6%	3.9%	4.3%	3.5%	0.5%
Foreign Exchange										
Euro (USD/EUR)	0.5%	-2.8%	-5.4%	-4.0%	-16.3%	-6.8%	-12.9%	2.5%	13.5%	4.8%
Australia (USD/AUD)	-1.2%	2.2%	-3.7%	-3.0%	-16.5%	-6.4%	-6.0%	1.0%	3.9%	3.1%
South Africa (ZAR/USD)	12.1%	-3.0%	2.8%	2.7%	18.2%	24.0%	5.2%	-8.3%	-13.1%	-1.8%

Source: Deutsche Bank

Industrial metals

Make hay while the sun shines: a short-term rally in the metals

The following section on base metals and bulks has been contributed by our commodities analyst:

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- We had forecast a challenging first half for the metals, predicated on a sluggish Chinese demand and one last leg of deflation for the miners, driven by weak oil prices and weaker producer currencies. Our improving outlook for later in the year was based on an acceleration of the much needed supply side cuts, which were gaining momentum in Q4 last year. Not only would these cuts start to balance markets, but would improve sentiment towards the metals.
- The key lesson from the year so far has been "Don't fight the liquidity". The surge in January Chinese Total Social Financing maintained the credit cycle that started in late Q3 last year. Although the underlying demand indicators remain mixed at best, there are some signs that the credit boom in may translate into better than expected metals demand, certainly for the first half. Housing starts and investment planned for infrastructure projects rebounded in the first two months of the year. Given the high leverage levels in China, we question the longevity of the current credit cycle. However, while it lasts, metals should continue to perform well. The key risk remains that underlying macro data does not respond to the current credit stimulus.
- Investor sentiment towards the metals has improved, but paradoxically the Q1 rally has not done the fundamentals any favours. In most metal markets there are assets which should close and close permanently. These will try to hang on for just that bit longer as losses look more manageable in Q1. We think supply curtailments will slow over Q2, and we may even see some restarts, especially in iron ore and aluminium where there is latent capacity.
- Has deflation been banished? The cost curve progression in most of the metals would suggest not. However the two main deflationary factors oil and producer currencies have moved in the opposite direction to our expectations, suggesting it will only be through management turning the last screw on costs that we could expect further cost deflation. The more dovish tone from the Fed has certainly halted the USD's rapid rise, ad producer currencies are up between 3 – 8% year to date.
- We think that aluminium continues to have the most challenging fundamentals and is therefore our least preferred commodity. A market balance relies on continued Chinese producer discipline. Their track record is not good, and we expect rapid restarts with any price rally. We think the bulk commodities are ahead of the game in terms of supply cuts, but both markets need further rationalization due to declining steel demand over the course of the decade. These will only come after a period of lower prices. We see further downside risks in copper with new tonnes from low cost projects still feeding the market over the next two years. We still think the fundamentals for zinc have improved with a bigger deficit than we had anticipated due to lower Chinese mined supply, despite weaker Chinese demand. Zinc is our preferred metal, although investor positioning already reflects this.

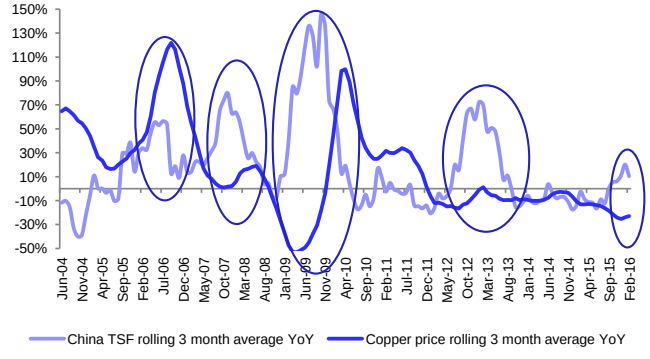
The flush of liquidity can only be a temporary pain killer

Chinese indicators remain mixed at best. A key driver of metal prices form their early January lows has been the dramatic credit loosening in January (USD500bn of new credit in a single month). The momentum in Chinese credit formation has been positive since the September last year, which can also be seen in the M1 money supply numbers. In each of the previous rounds of Chinese credit stimulus, the copper price has performed well, with the exception of the 2012/13 stimulus. We compare the previous credit cycles to glean the likely impact on the 2016 cycle.

- 05/06 – modest credit growth, but the supply side was tighter, so there was a strong price response.
- 07/08 – we started to have the sniff of the GFC in the OECD, so a more limited price response
- 09 – the largest credit stimulus to date combined with supply cuts and capex delays = an excellent price response
- 12/13 – the economy was already maturing, and the supply side had responded with restarts and new mines. There was a limited price response, but the price did stabilize and did nudge into positive territory.

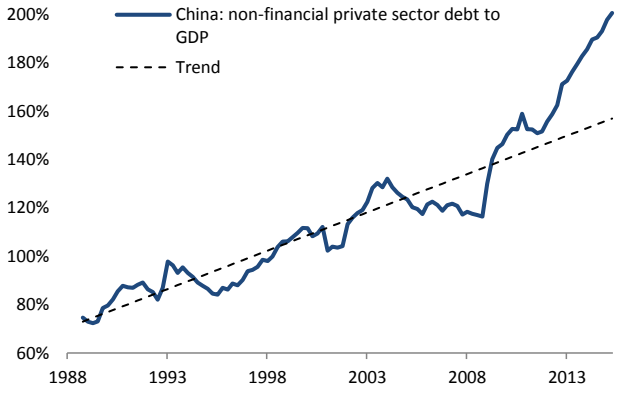
If we assume that there is a sustained credit event, there is less of the liquidity that is likely to go into the metals intensive sectors. Admittedly the infrastructure and property FAI numbers have surprised on the upside for Jan and Feb. Depending on the longevity of the credit cycle, we could see a copper rally to USD5,500/t, with prices stabilizing similar to the 2012/2013 cycle. However, we expect a more muted credit cycle this time round, simply because of the already high debt levels in the private sector.

Figure 13: Copper price momentum versus Chinese Total Social Financing momentum



Source: Deutsche Bank, Bloomberg Finance LP

Figure 14: Private sector leverage remains very high



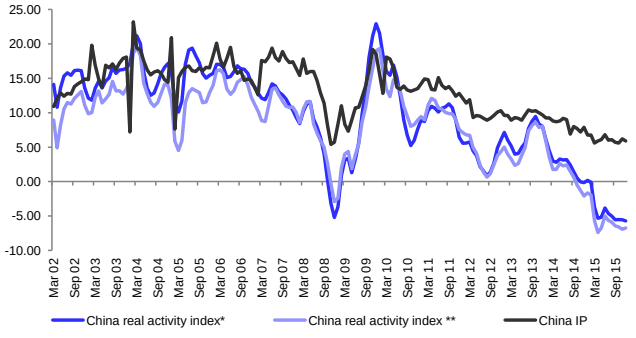
Source: Deutsche Bank, Datastream

The activity data in December to February (not all the data is available due to Chinese New year was mixed. remained weak in our view. On the positive side, M1 money supply rose by 17% year on year. However, our China Real activity index has stabilized but remains in negative territory. The current level of the index is barely higher than during the global financial crisis. IP growth edged lower to 5.4% in Jan-Feb from 5.9% in December.

Figure 15: China M1 money supply growth

Source: Deutsche Bank, Bloomberg Finance LP

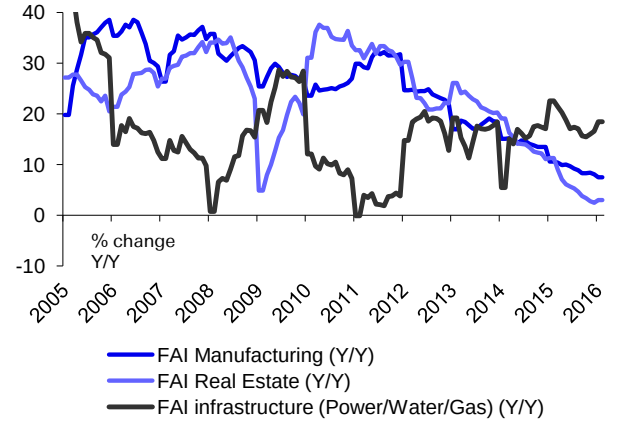
Figure 16: China real activity index



*Source: Deutsche Bank, Bloomberg Finance LP, *simple average of 3MMA growth rates in rail traffic, electricity output, steel output and cement output, **excludes steel output*

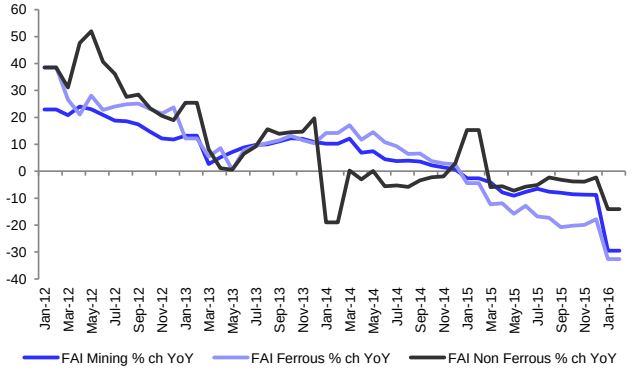
From a materials perspective, FAI rebounded to 10.2% yoy in Jan-Feb from 8.9% in Q4. Surprisingly, Real estate investment recovered from a low level in Jan/Feb. Manufacturing continued to trend down to 7.5%. Construction FAI was barely positive, but infrastructure FAI accelerated to 18.5%. On the supply side, the weak FAI into Mining, both Ferrous and Non Ferrous, the sharp fall is positive indicating the slow-down in capacity addition.

Figure 17: Chinese FAI Manufacturing, Infrastructure and Real Estate



Source: Deutsche Bank, WIND, CEIC

Figure 18: FAI Mining, Ferrous and Non Ferrous



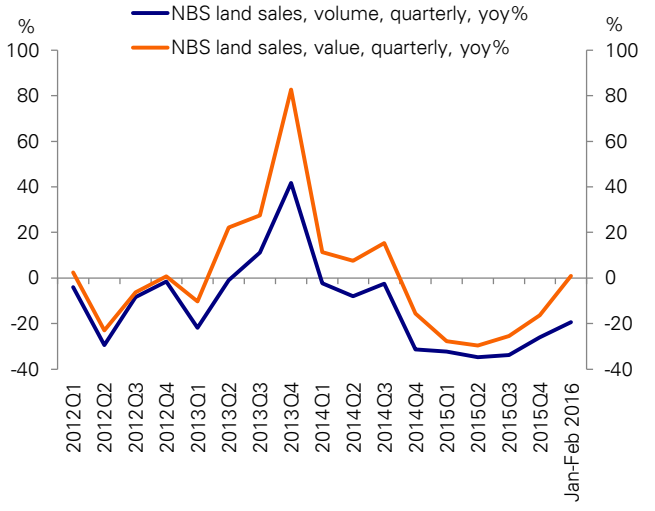
Source: Deutsche Bank, WIND, CEIC

A few of the other indicators in the property sector rebounded as well. The value of property sales grew by 43.6% in Jan-Feb, compared to 12.8% in Q4. In volume terms, property sales grew by 28.2% vs 4.8% in Q4 (Figure 22). Land sales grew by 0.9% in value terms and -19.4% in volume terms, better than -16.5% and -26.1% in Q4 respectively (Figure 19). New housing starts rose sharply by 13.7% from -17.7% in Q4 (Figure 20). This suggests the momentum in property investment may continue at least in the next few months. A futher positive signal for growth in the short term is that planned investment for new projects grew by 41.1% yoy in Jan-Feb, much higher than 5.4% in Q4 (Figure 21). This suggests the infrastructure investment growth will likely pick up in H1.

Some of the negatives include the fund available for FAI, falling to 0.9% from 7.7% (Figure 23) in Jan-Feb. The key driver of weaker funds available is the self-raised funds, which dropped by -3.1%. This may reflect weak profits in the corporate sector which drives down reinvested earnings. Funds from bank

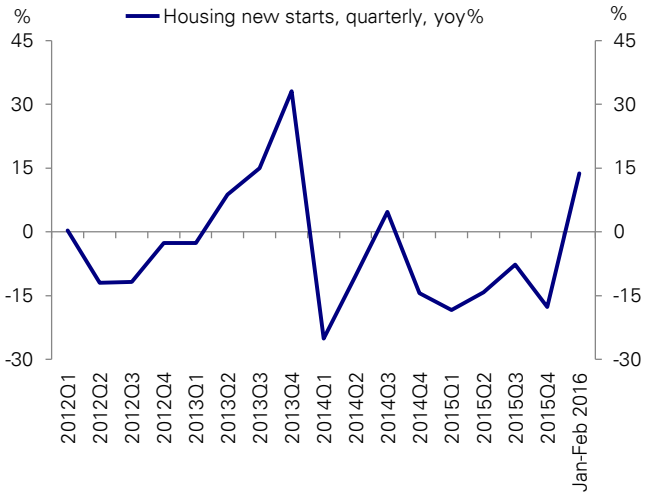
loans rose in Jan-Feb after trending down throughout 2015. There is also no getting away from the high inventory levels in the property market (Figure 24).

Figure 19: NBS land sales



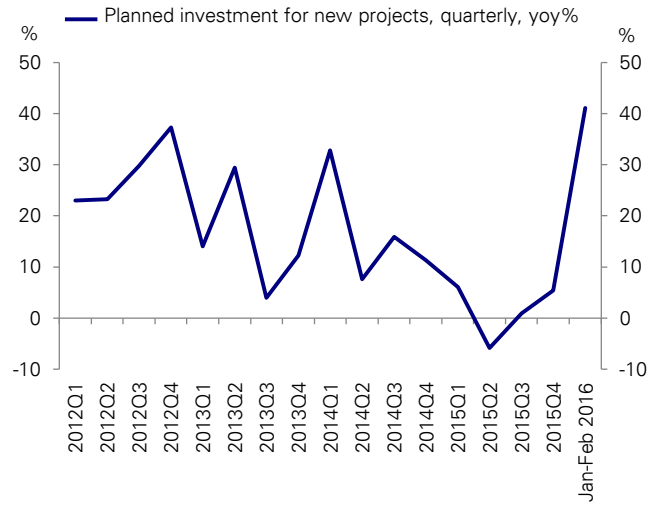
Source: Deutsche Bank, Haver Analytics

Figure 20: Housing new starts



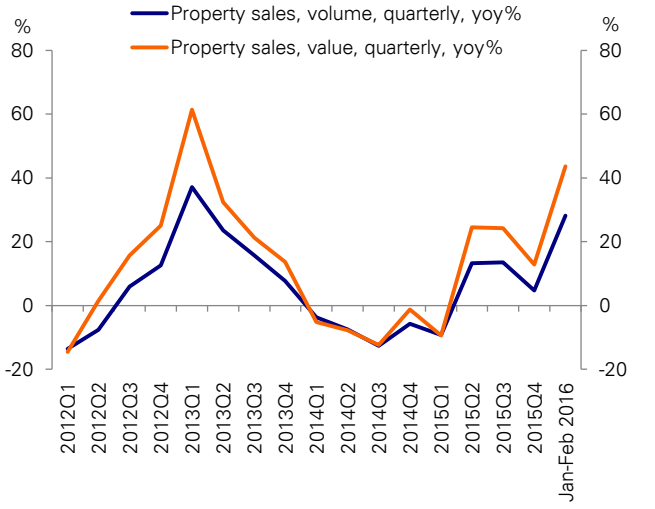
Source: Deutsche Bank, WIND

Figure 21: Planned investment for new projects



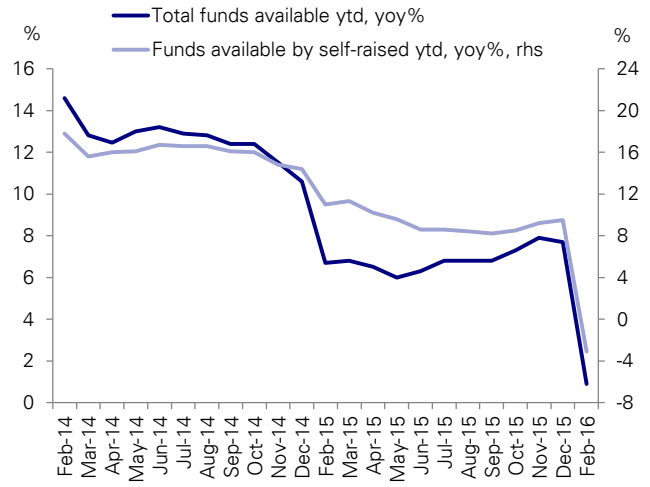
Source: Deutsche Bank, WIND

Figure 22: Property sales



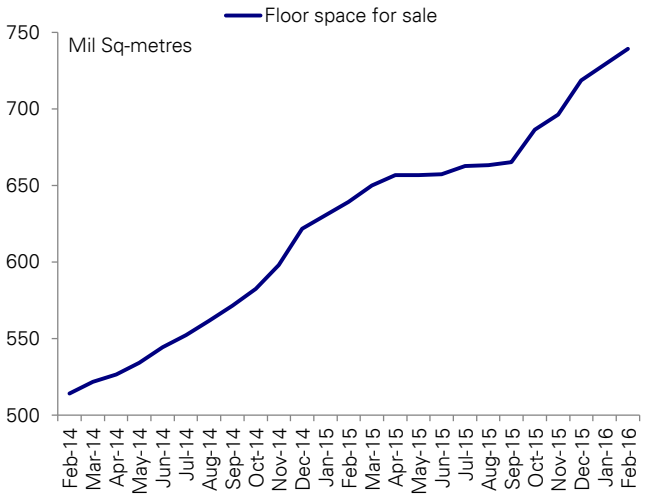
Source: Deutsche Bank, WIND

Figure 23: FAI funds available



Source: Deutsche Bank, WIND

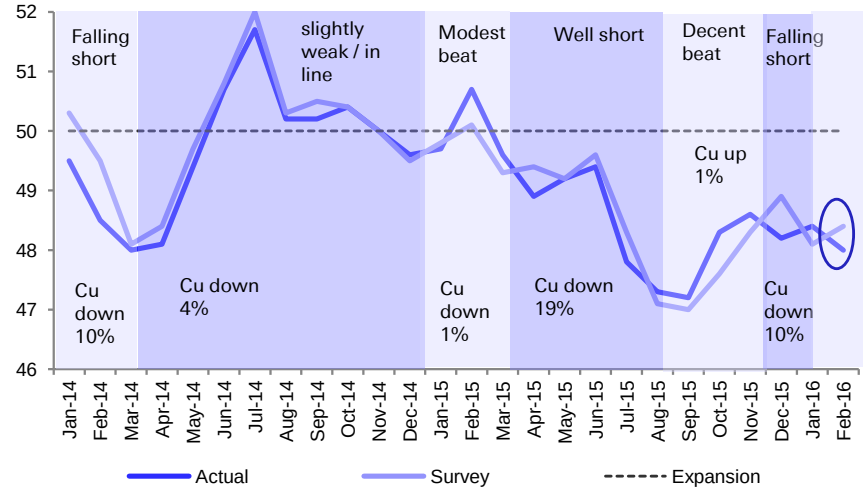
Figure 24: Property inventory



Source: Deutsche Bank, Haver Analytics

The Caixin China manufacturing purchasing managers' index (PMI) has recovered from its six-and-a-half-year low of 47.0 in September. Nevertheless, the February reading of 48, was well below the 48.4 Bloomberg consensus poll. This compares with a final reading of 48.4 in January. The closely-watched gauge of nationwide manufacturing activity focuses on smaller and medium-sized companies, filling a niche that is not covered by the official PMI data. The trend has been for copper to underperform when the reading misses consensus and to outperform when beating consensus. So far this year the increase in liquidity has overwhelmed this trend.

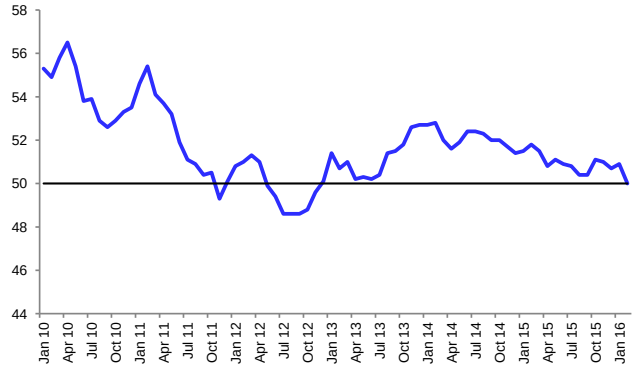
Figure 25: China Caixin Manufacturing PMI



Source: Deutsche Bank, Bloomberg Finance LP

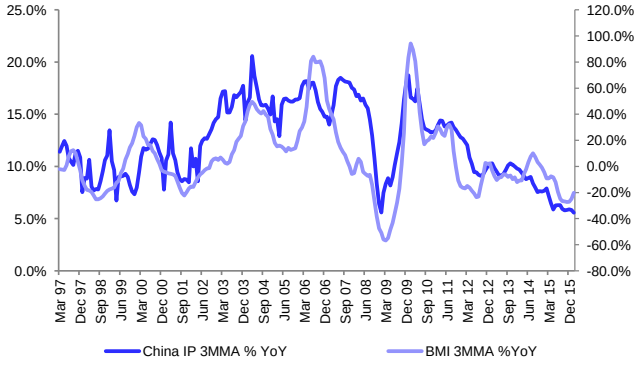
The JPM Global manufacturing PMI continued to weaken touching 50, and is now at a multi year low. The last time this indicator fell below 50, was in 2012 during the Euro crisis.

Figure 26: JPM Global Manufacturing PMI



Source: Deutsche Bank, Bloomberg Finance LP

Figure 27: China IP 3MMA % YoY versus the Base Metals index

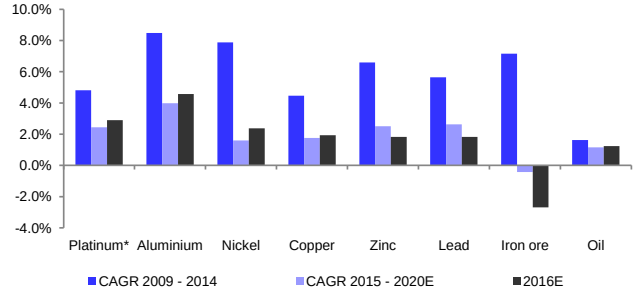


Source: Deutsche Bank, Bloomberg Finance LP,

A structural shift in demand confirmed

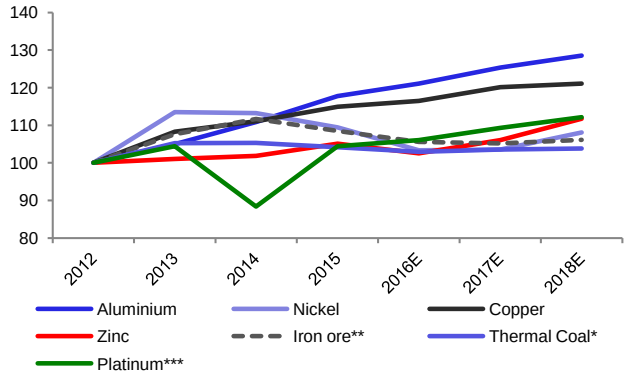
We think 2015 marked the start of the structural slowdown in metals demand in China, one year later than steel where demand turned negative. We forecast Chinese metal demand growth rates to move much closer to that of a Developed World economy. In copper for instance, we forecast the Chinese CAGR over the next five years to be 2.2% as opposed to 7.7% over the past five years. This translates into global copper demand growth slowing from 4.5% to 1.8% over the next five years. Although demand growth has been slowing modestly since 2012, the sharp slowdown is being experienced in 2015. As highlighted on the chart below, we forecast negative demand growth rates for iron ore as the raw material linked to steel output, which we think is at peak consumption in China.

Figure 28: 2015 marked the slowdown in global metal demand growth.



*Source: Deutsche Bank, Wood Mackenzie, ** Global market, * Seaborne market*

Figure 29: Supply momentum in the metals fading



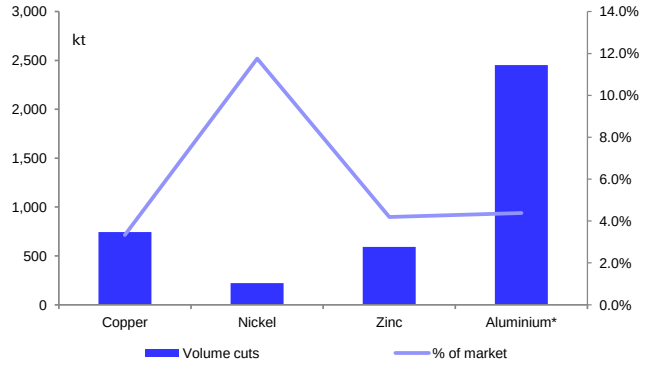
Source: Deutsche Bank

The supply side has started to adjust to a world of lower growth rates, but still has a way to go in many commodities before the markets are balanced once more. We discuss the supply side dynamics in more detail in each of the individual sections. The bulk commodities have started to adjust to the lower demand, which is unsurprising given the weak pricing and weak steel demand outlook. In iron ore, we expect further cuts from the domestic Chinese producers, non-traditional suppliers and some of the mid tier producers in Australia and Brazil. In coking coal, we expect further cuts from the US and Canadian producers. However for these cuts to occur, we think there needs to

be a period of weaker pricing to force the final capitulation. In the base metals, there is a bit more differentiation on the supply side. Although aluminium has the best demand outlook, it also has a supply side which is the least likely to curtail production as a result of Chinese overcapacity and the propensity for high cost Chinese producers to be more nimble and opportunistic during periods of price strength. Copper is the most difficult metal to bring to market, but the project momentum still has two more years to run. After a modest uplift in 2015E, the zinc market should see much slower supply growth. Our increases post 2017E relies on funding and successful execution by a number of junior producers, and Chinese domestic production continuing to grow at c.4% per annum. Both of these assumptions are at risk if prices remain below USD2,000/t for any length of time. Many of the loss-making producers in the Nickel market have hoped for the Chinese nickel pig iron producers to fold as ore supplies dry up. Weak demand and Philippine ore stymied this hope. However, the extended period of weak pricing has seen contract, and we see 2016 production levels, a mere 3% higher than in 2012.

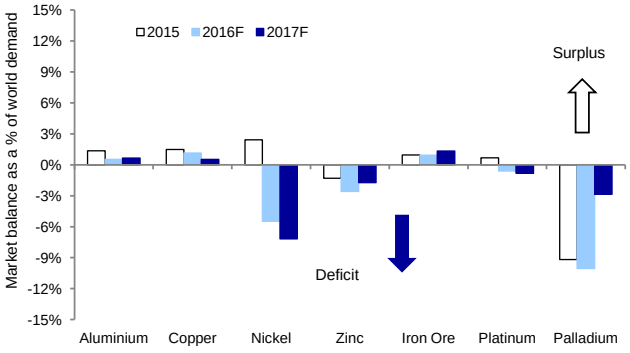
The supply cuts had started to accelerate in Q4'15, but new announcements have dried up just recently with the price rally. We think further cuts are required in copper and aluminium in order to balance the markets even before we consider the necessary stocks drawdown. In nickel, we forecast a deficit markets, but we think further cuts are needed to draw down inventories. Zinc is the only market where nature has done the work for us, and more limited cuts are needed.

Figure 30: Base metal supply cuts



*Source: Deutsche Bank, Company announcements, *aluminium includes the net cut in China of c.1Mtpa*

Figure 31: Surplus / deficits as a percentage of the market



Source: Deutsche Bank, Wood Mackenzie

We continue to forecast surplus markets in aluminium, copper and iron ore for the next two years to 2017E. We forecast the platinum and zinc markets to be in a modest deficit for the next two years, although we expect zinc deficits to diminish over the next two years. We forecast significant deficits in both nickel and palladium, although both these markets have significant inventory overhangs.

One last leg of deflation before the inflationary cycle begins.

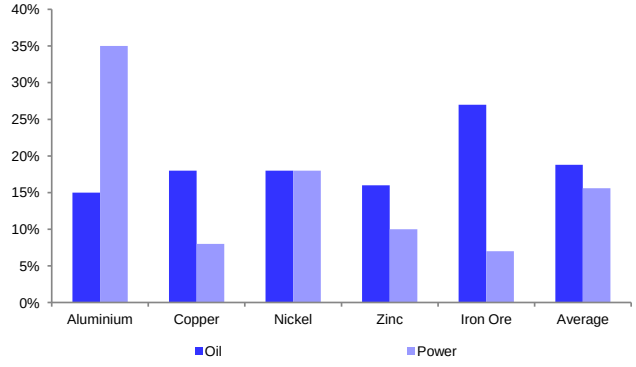
We have previously argued that the mining sector will still be subject to deflationary forces in 2016. The slowdown in Chinese demand notwithstanding, the fall in metal prices is both symptomatic of the deflationary environment and a cause of deflation. It is no surprise that Chinese manufacturing purchasing prices have been in negative territory for nearly fifty months in succession. We forecast one last leg down in metals prices, but with an end of deflation finally in sight.

How do we arrive at this view? Metal markets have been either well supplied or over supplied for the past five years, a combination of slowing Chinese demand growth and a surge of mined output, as many of the long gestation projects finally started to deliver tonnes. In this environment prices should fall to the marginal cost (nominally the ninetieth percentile on the industry cost curve), forcing closures and ultimately balancing the market.

Supply has proven to be sticky, however, with miners balking at the costs and environmental liabilities of shutting an operation. Strong deflationary forces have given management teams the misconception they can beat the decline in metals prices by reducing costs, and in so doing maintain profitability. To a certain extent the miners have been victims of their own success; their ability to take out costs as a group has helped the fall in metals prices.

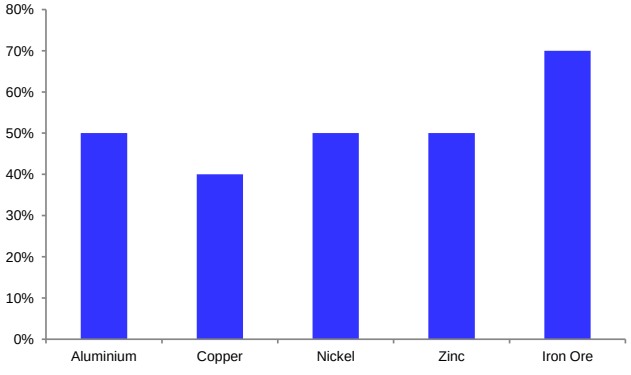
What have been the other deflationary forces in metals? One is the fall in energy prices, both oil and coal. In total, these inputs account for 30-40 per cent of direct and indirect costs. Another is the depreciation of currencies of commodity producing countries against the dollar with most miners having at least half of their costs in local currencies. Then there is the deflationary feedback loop, where lower prices also translate into lower input costs and royalties. The last and least understood area of deflation is the change in operational mode. In good times, mine strategies and planning are focused on revenue maximisation; in bad times, the approach changes to margin protection and cost cutting. Actually, miners have an additional lever to pull. They can mine higher grades, which equates to shifting less dirt for more metal. This is fine in the short-run, but compromises the architecture of a mine, making some reserves less economic to extract later.

Figure 32: Metal cash cost exposure to oil and power



Source: Deutsche Bank

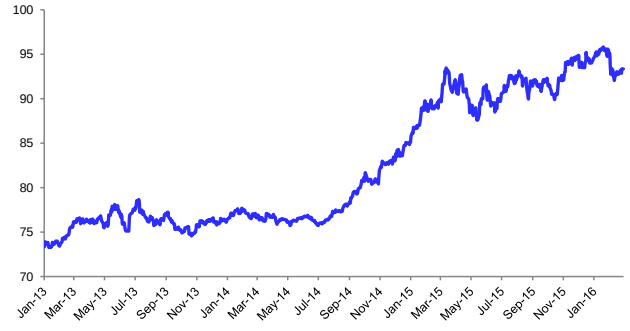
Figure 33: Metal cash cost exposure to producer currencies



Source: Deutsche Bank

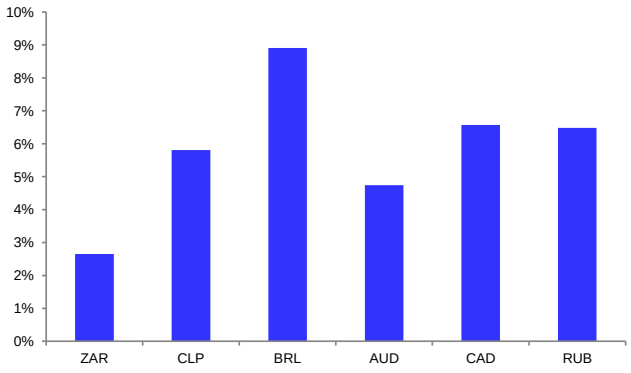
Our call for a final leg down in metals prices is based on weaker-than-expected oil prices and the potential depreciation of the Chinese renminbi. Metals were factoring in oil at $40 a barrel – not prices of the low $30s, which was the prevailing spot price. The rebound in oil has eased this component of deflation so far this year. Furthermore, a strong USD and a weaker Chinese currency is likely to drag down commodity currencies even further. So far this has not been the case for 2016. This may return as and when the USD regains its ascendency. Management teams may be able to take out more costs, but we are at the point where these cuts would be unsustainable, ultimately leading to lower output in the future.

Figure 34: The USD (TWI) taking a pause for breath



Source: Deutsche Bank, Bloomberg Finance LP

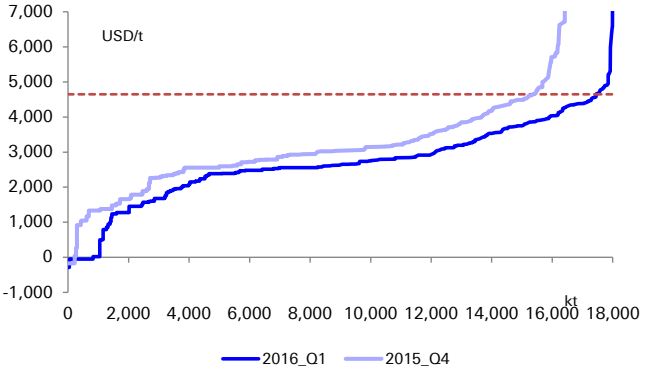
Figure 35: Commodity currencies have appreciation 3 – 9% year to date



Source: Deutsche Bank, Bloomberg Finance LP

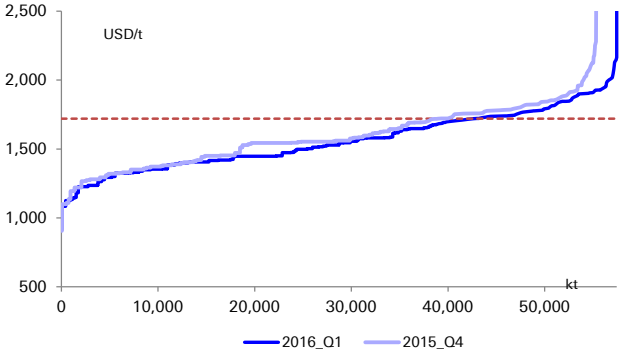
We contrast the cost curves from Q4'15 to Q1'16 which as a general rule highlights the continuing deflation.

Figure 36: Copper C1 cash cost curve



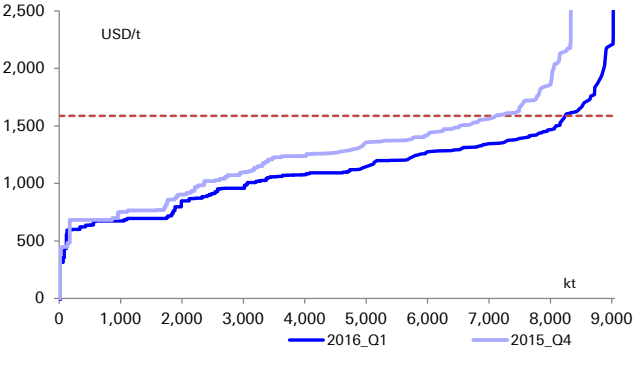
Source: Deutsche Bank, Wood Mackenzie

Figure 37: Aluminium C1 cash cost curve



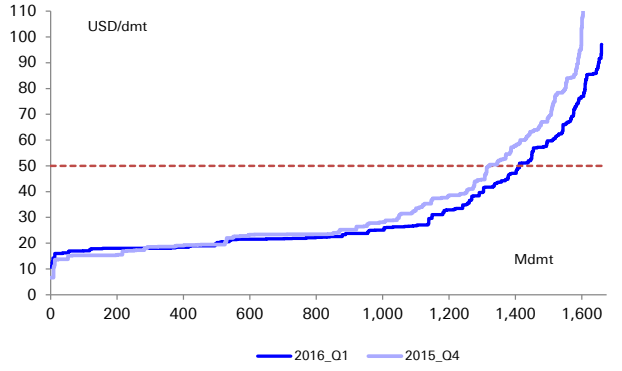
Source: Deutsche Bank, Wood Mackenzie

Figure 38: Zinc C1 cash cost curve



Source: Deutsche Bank, Wood Mackenzie

Figure 39: Iron ore cash cost curve

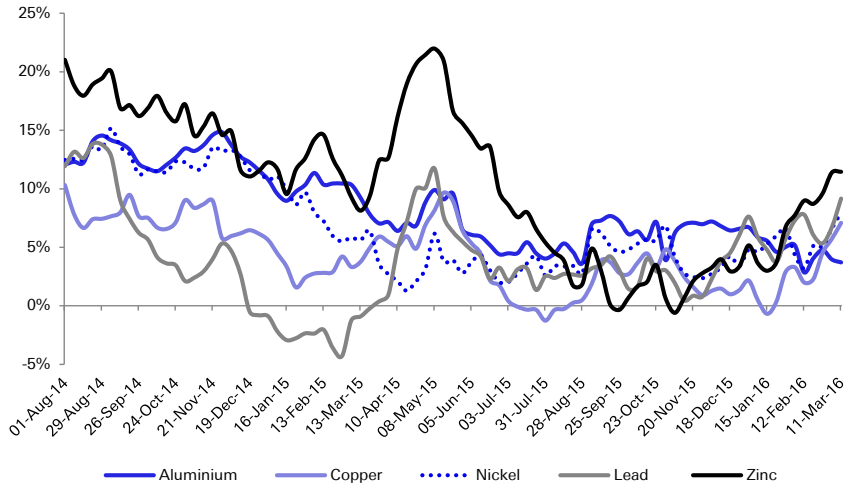


Source: Deutsche Bank

Investor positioning – taking a more positive stance

Investors in the base metals have turned more bullish since the beginning of the year, with copper and zinc well above their net short positions in late Q4 and early Q1. Zinc has returned to its customary position as the most preferred metal, closely followed by lead. Both copper and nickel positioning has improved significantly of late, Aluminium remains the laggard and is the only metal where the net long position is currently lower than at the beginning of the year.

Figure 40: Net positions of the Money Managers expressed as a percentage of open interest



Source: Deutsche Bank, LME

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Copper: Two more surplus years

- The copper market is still in an adjustment phase and in our assessment will remain over-supplied for the next two years. Chinese copper demand slowed from 7.3% in 2014 to 3% in 2015. This is a structural slowdown, and in our view, demand is unlikely to re-accelerate to +5% over a sustained period. We maintain our view that we should consider China as a "developed" economy, certainly through the eyes of metal demand. In terms of copper demand, this means 1 – 3% demand growth. Although there is over-capacity in many of the heavy manufacturing industries, we think this is cyclical. We do not expect a structural hollowing out of capacity as seen in the US when industries were "off-shored", and copper demand contracted for a number of years.
- On the supply side, we are still at the tail end of the capex cycle. Although peak capex in the mining sector was in 2012, some of the mines that have been in development will deliver their first tonnes in 2016; the Las Bambas mine in Peru epitomizes this late cycle capacity addition. Supply disruptions and price led cuts will mitigate these new cost mines in 2016, keeping mined supply growth below 2%. However depending on how quickly some of the shuttered capacity ramps back up (Glencore's African capacity specifically), 2017 is likely to see mined supply jump back over 3%.
- The magnitude of the combined surplus over the next two years is likely to be c.400kt. This could easily be absorbed by the SRB. Our point here is that when we have a flush of liquidity, modestly more positive demand indicators, restocking activity, improving sentiment and a delayed effect from tonnes being withdrawn (as seen by falling TC/RC's), the price will react. Fundamentally, we do not think that the market has changed, but if the duration of the credit cycle lasts for any length of time, the rally in copper (and the other base metals for that matter) could have legs, especially if some the liquidity encourages a revival in the property market.
- We have reviewed our list of potential copper projects used to assess the incentive price for copper. Weaker producer currencies and lower contactor margins have resulted in lower capex intensity (down 14% from our previous estimate). This in turn translates to a lower incentive price of USD6,440/t, down 7.3% from our previous estimate of Oct 2015.

Let's get Las Bambas out of the way.

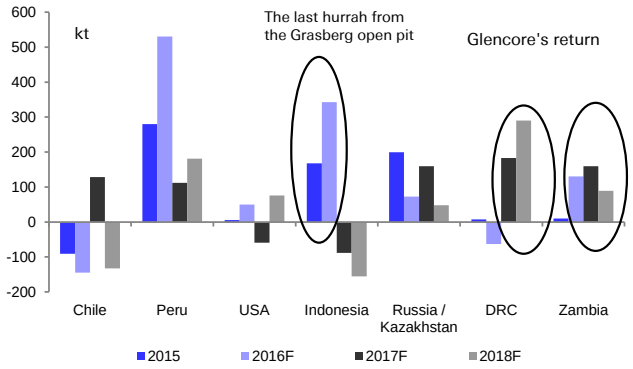
Although bringing on a new copper mine in Peru is not an easy task, especially managing complex community relations, we forecast Peruvian supply to increase by a CAGR of 12.5% (or 1Mt) over the next four years. The increase in capacity is spearheaded by the Las Bambas mine. The increase in Peruvian output offsets the price led price shuts which are now close to 800ktpa for 2016. We have a fairly slow ramp up of Glencore's African output in 2017, especially after the recent pit wall failure. Peru also has to compensate for neighbour Chile's maturing ore bodies.

Figure 41: Outlining the big supply swings mine by mine

kt	2015E	2016E	2017E	2018E	Cumulative
Grasberg	32	381	-75	-150	188
Escondida	-40	-152	112	-35	-115
Big 2	**-7**	**229**	**37**	**-186**	**74**
Sentinel	50	115	70	0	235
Toromocho	100	40	-10	0	130
Sierra Gorda	87	13	14	3	118
MMH	28	10	10	-23	25
Caserones	45	56	30	-5	126
Constancia	106	4	-20	20	110
Morenci	119	6	-71	0	55
Ramp-up	**535**	**245**	**23**	**-5**	**798**
Cerro Verde	10	218	-18	54	264
Buenavista	105	138	19	0	262
Toquepala	-11	0	62	38	89
Brownfield	**103**	**356**	**63**	**92**	**614**
Las Bambas	0	150	130	70	350
Cobre Panama			0	200	200
Boschekul / Aktogay	0	70	105	38	214
Antucoya	12	54	20	0	87
Bystrinskoe				30	30
Jabal Sayid	0	53	20	0	73
Greenfield	**12**	**327**	**276**	**338**	**953**

Source: Deutsche Bank, Company reports, Wood Mackenzie

Figure 42: Copper mine additions by region



Source: Deutsche Bank, Wood Mackenzie

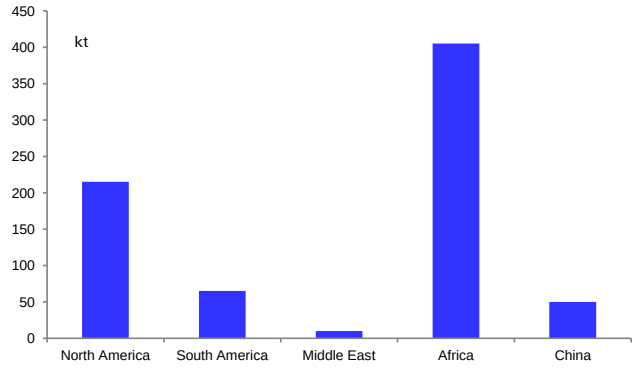
The supply led cuts in the industry gathered momentum in Q4'15 and the first two months of 2016. We note that there have not been any further announcements since the recent price rally. Growing to the list of proposed suspensions are Chibuluma South, in Zambia owned by Metorex Ltd (Jinchuan Group), Huckleberry, in British Columbia owned by Imperial Metal, Minto in Canada owned by Capstone Mining and Kapulo, in the DRC owned Anvil Mining/Mawson West accounting for 53.5kt of cut in copper production. Katanga Mining, a subsidiary of Glencore on 8th march 2016, reported a "geotechnical failure" which led to the collapse of the north wall at the open pit KOV mine. Three workers have died and five are missing. The mine in DRC, was put into care and maintenance since September last year and the 7 workers were undertaking maintenance, when the accident occurred. Glencore also later commented that an "unknown amount o damage" to the dewatering infrastructure in the pit has occurred due to the accident.

2015 saw about 15 companies missing their output target which was partly offset by output from 10 companies, exceeding the guidance for the year. Freeport-McMoRan contributed for the largest divergence (-115kt) from company's production projections, due to lower production from their El Abra, Tyronne and Sierrita Mines. Antofagasta's consolidated production fell 11% in 2015, due to lower grade of Cu in Centinela mine and community protest in their Los Pelambres mine. Glencore's 2015 copper production fell 3% in 2015, and was 55kt below the guidance given in August. The price-related suspension of processing operations at Katanga and curtailment at Mopani were partly offset by increases at Antapaccay, following a mill restart in May and strong milling performance at Antamina.

Barrick Gold and First Quantum were the top two overachievers with actual production more than company projection by 84kt and 38kt respectively. The Zambian government scaled back its controversial royalty charge in April 2015 and this resulted in Barrick Gold to increase their production significantly, while First Quantum's Kansanshi mine in Zambia also gave a strong performance.

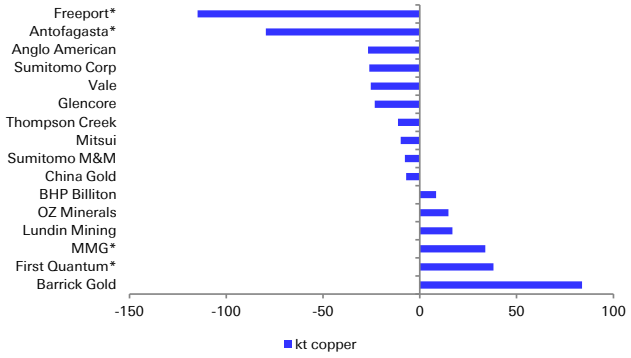
MMG beat its production guidance by 34kt, as the company achieved record copper production of 207,kt , up 8% y-o-y. One of the main contributors was the startup of Las Bambas, but all of the company's assets exceeded guidance.

Figure 43: Mined copper price related closures



Source: Deutsche Bank, Wood Mackenzie

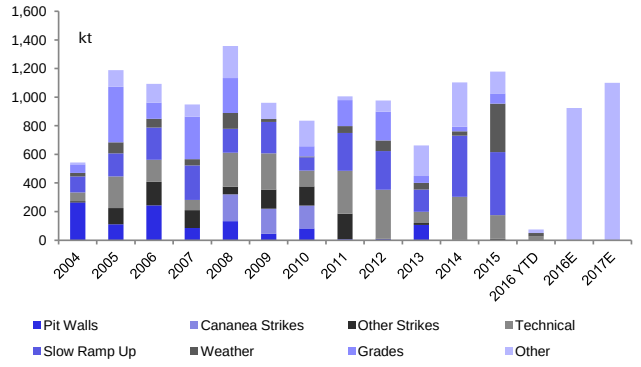
Figure 44: Company production versus guidance for 2015



Source: Deutsche Bank, Company reports, SNL

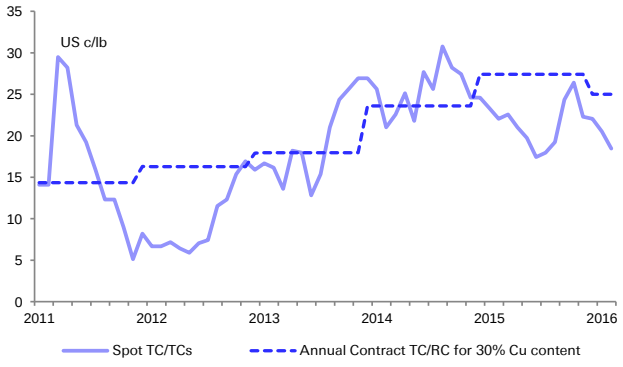
The scale of mining disruptions in 2015 was relatively high, amounting to just under 1.2Mt. So far the scale of disruptions are relatively low, amounting to c.75kt. The high disruptions in combination with the price related shuts have tightened the concentrate market. The spot market for concentrate sales directly to smelters continued the downward trend. TC/RCs of around USD85-90/t and 8.5-9 c/lb were quoted towards the end of February, signaling a slight tightness. Smelters trying to replenish their stocks after curtailing purchases during the 'Mating Season' for 2016 long-term contracts may be the reason for the perceived tightness. Traders short of concentrates needed to meet their commitments of H1 2016 also added to the tightness. Over the month sales to traders were reported in the USD70-85/t range, with clean concentrates attracting the lower figures. More recently, The decline in treatment and refining charges for copper concentrates slowed in the first half of March as smelter purchases tailed off and the volume of spot material available to traders increased. The Metal Bulletin Copper Concentrates Index was calculated at USD84.1/t /8.41 c/lb on March 15, down from USD85/8.5c/lb at the end of February. While the volume of material sold to smelters in China dropped during the period, traders said that terms of about $85/8.5 are still being achieved for clean material. However, after a period of restocking following the Chinese New Year, smelters are increasingly pushing for higher terms in negotiations, traders said.

Figure 45: Copper mine supply disruptions



Source: Deutsche Bank, Wood Mackenzie

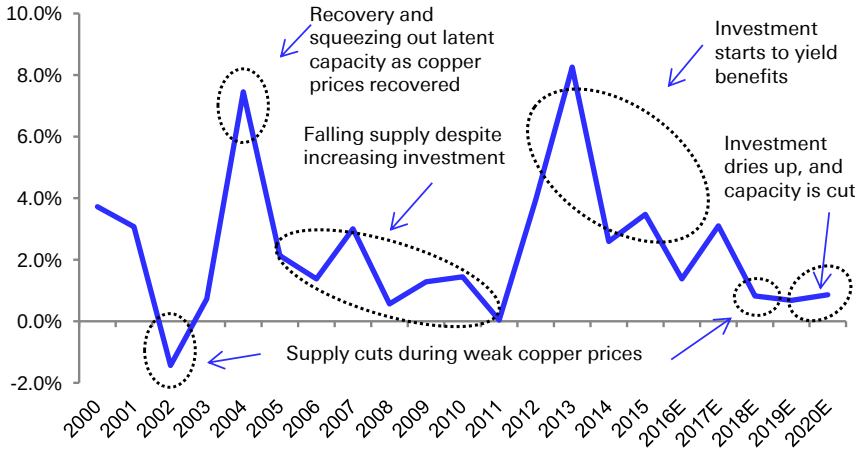
Figure 46: Spot and Annual Contract TC/RCs



Source: Deutsche Bank, Wood Mackenzie

The combination of all these factors result in our forecast of decent mined supply growth for the next two years before the dearth of capex in the industry starts to tighten up the market.

Figure 47: Mined supply growth over two decade

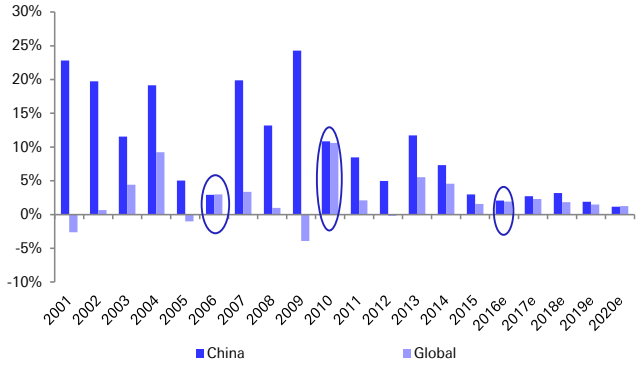


Source: Deutsche Bank

Structurally slower Chinese demand confirmed

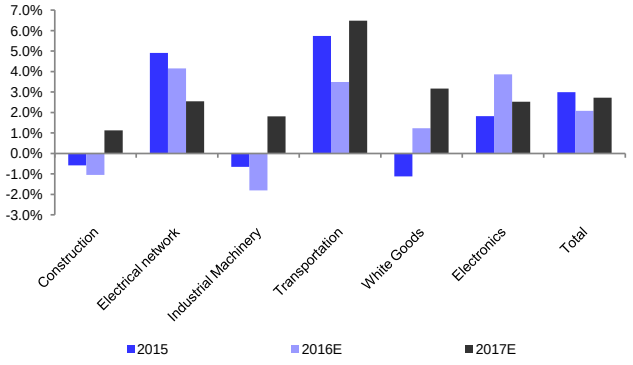
Chinese real copper demand in 2015 is estimated at c.3%, which is down sharply from the 7.3% in 2014. This dragged down global demand from 4.6% to 1.6% for 2015. We forecast lower Chinese demand growth in both 2016E and 2017E at 2.1% and 2.7%. A recovery in demand in India and Russia to a lesser extent, a recovery in Japanese demand, and firm demand in the peripheral Asian countries should see global demand remain around 2% for both years. In China, the Construction, Machinery and White Goods sectors were negative, whilst the Grid and Transportation sectors were the stand out positives.

Figure 48: Global copper demand growth (Global & China)



Source: Deutsche Bank, Wood Mackenzie

Figure 49: Chinese copper demand growth by sector

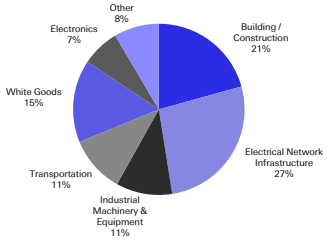


Source: Deutsche Bank, Wood Mackenzie

We forecast copper demand from construction sector and industrial machinery sectors to remain weak in 2016. Whilst we expect the grid (Electrical Network) and the Automobile sector will remain the relative positives.

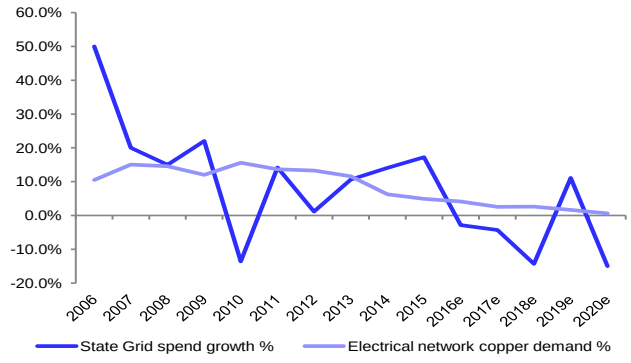
The Chinese government set a target of 9% growth in grid investments for 2015. After a slow start, due to the anti corruption campaign in China, investment gained momentum and by the end 2015, grid investments grew 11.7% surpassing the initial target. The investments lead to increased copper wire rod demand for cables and transformers. We expect this momentum to continue into 2016. The State Grid (SGCC) announced a budget increase of RMB439Bn which is a 3% decrease over last year. The increase in orders placed for copper wire and rod in late 2015, should translate into actual copper consumption post the Chinese New Year. The SGCC reiterated their current priority of the organization will be to upgrade both urban and rural distribution networks, and the integration of renewable energy generation capacity. These are high copper intensity projects and the lower copper prices should all things being equal lead to a higher usage of raw materials. This fits in with the China National Energy Administration (NEA) plan, which aims to achieve growth in medium voltage transformer capacity and installed power line length by 40% and 30% respectively by 2020 and set aside 2 Trillion RMB for the distribution network. The development plans also aims to increase the share in underground cables by 60% in urban areas by 2020. Copper demand arising from this development plan is positive in the midst of slowing Chinese economy.

Figure 50: Chinese copper demand by sector



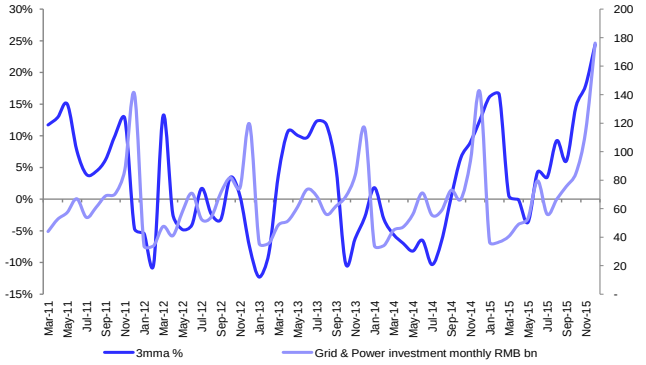
Source: Deutsche Bank, Wood Mackenzie

Figure 51: Copper demand growth in the grid



Source: Deutsche Bank, NBS, Wood Mackenzie

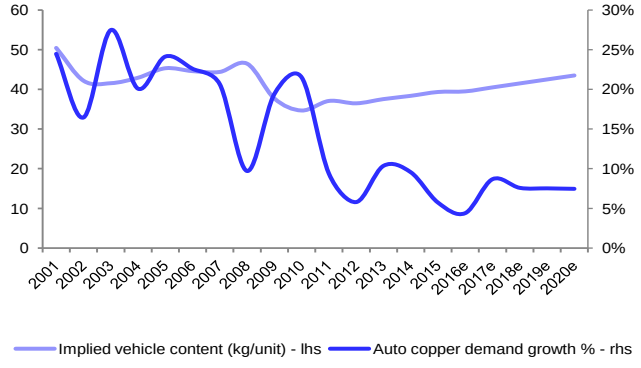
Figure 52: Positive momentum into the year end



Source: Deutsche Bank, NBS

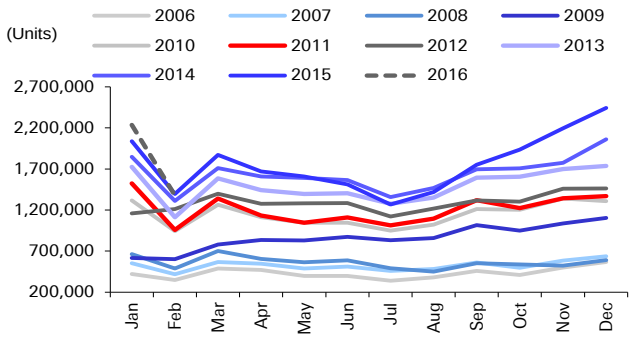
The Auto sector continues to be another positive demand driver for copper in 2016, continuing the trend from H2'15. The cutting of taxes for <1.6l capacity vehicles resulted in a significant improvement in Auto sales and we expect Chinese PV sales to grow by 8.2% in 2016. Chinese PV sales excluding SUV were the biggest drag on auto sales for the first 9 months of 2015 and the continuation of tax cut for mid range PV till the end of 2016 will be a strong support for demand from the rural consumers similar to Q4 2016. The sustainability of demand from PV in 2017 post the discontinuation of tax cuts remains to be seen, but we note that trick sales have started to improve. February 2016 sales (1.38m) were down 1.4% year on year but the 2M 2016 sales (3.6m) were up by c.5% when compared to 2M 2015 production. We forecast slightly lower production growth and a bit of destocking, hence our copper demand expectation dips slightly in 2016E.

Figure 53: Improving SUV market share and a recovery in truck sales should drive the ave copper content higher



Source: Deutsche Bank, Wood Mackenzie

Figure 54: China passenger vehicle sales

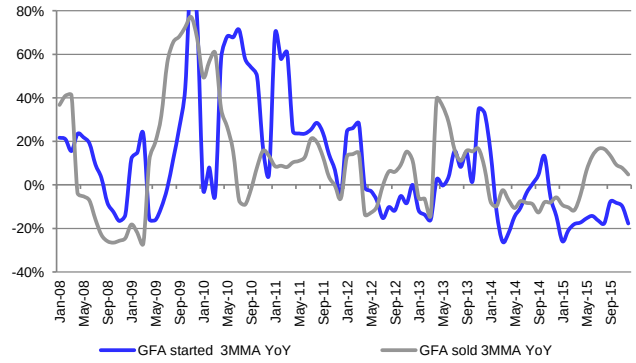


Source: Deutsche Bank, CAAM

We think property sector demand will remain subdued through 2016 as there is insufficient demand in the lower tier cities to draw down inventories to kick start new developments. Property starts were down c.14% in 2015, whilst property sales were up c.5%. Data quality notwithstanding, this simple contrast highlights the inventory issue. The property sales momentum has already started to taper Usually copper usage in construction picks up towards the end of life cycle of a construction and is more linked to forward looking

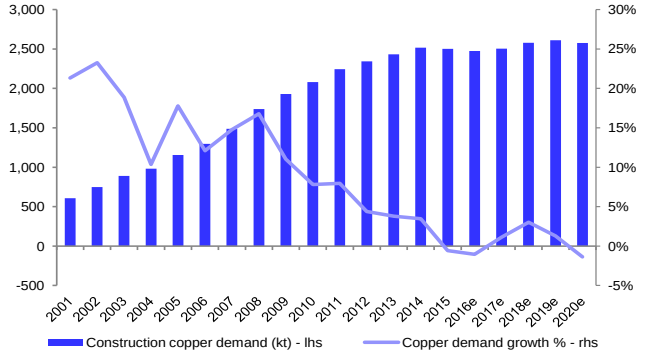
property completions, which were down c.7% in 2015. After a brief flurry of completions in Q3, there has been a sharp decline once more.

Figure 55: Chinese property sales versus completions



Source: Deutsche Bank, NBS

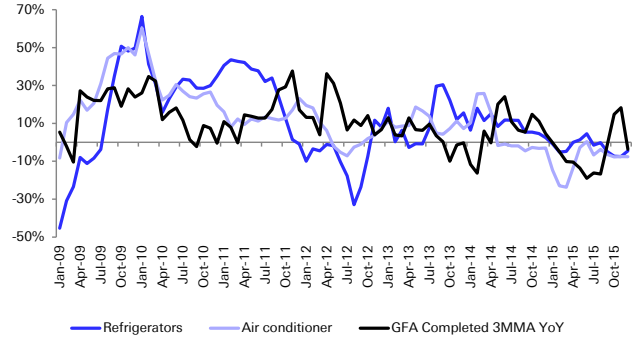
Figure 56: Chinese copper demand in construction (Property)



Source: Deutsche Bank, Wood Mackenzie

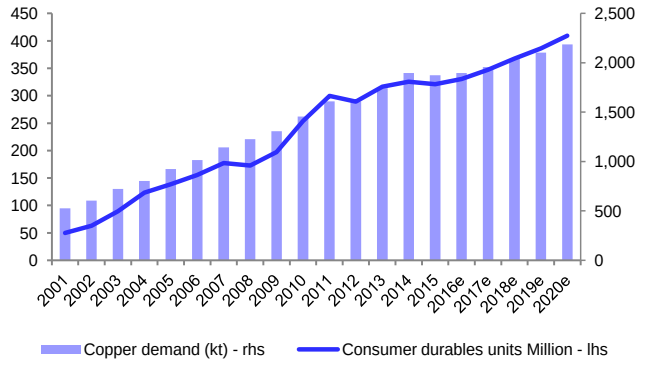
Air conditioner production was down 0.7% in 2015, when compared to a growth of 9.7% in 2014. The main reasons for the slowdown was a combination of a decline in new house completion, large inventory levels (50 million units), sluggish export numbers and a milder Chinese summer in 2015. The pickup in exports in last two months of 2015, whilst helpful does not solve the problem and the outlook for 2016 remains muted.

Figure 57: Consumer durable production versus property completions



Source: Deutsche Bank, NBS

Figure 58: Consumer durable units versus copper demand



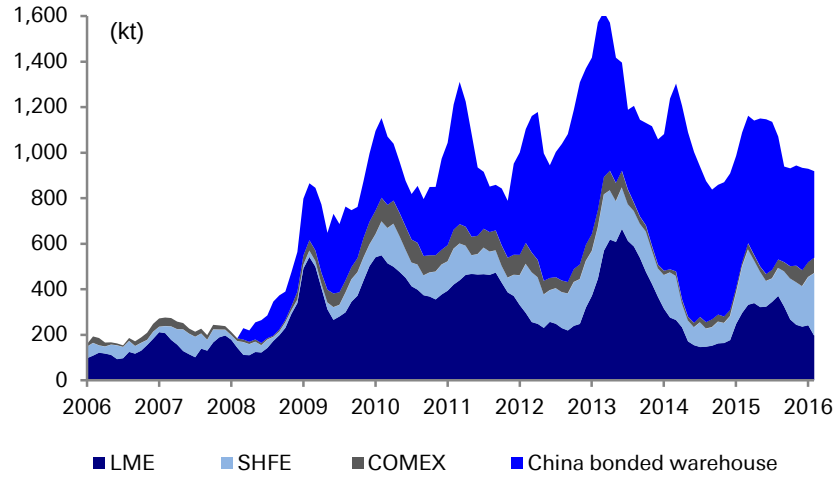
Source: Deutsche Bank, NBS, Wood Mackenzie

Visible inventories: – a divergence between the LME and SHFE

Visible copper inventories have stayed relatively flat since the beginning of the year, although there have been contrasting flows – outflows from the LME and inflows onto the SHFE. LME stocks continued to decline are now at 170kt, levels last seen at the end of 2014. In contrast, SHFE inventories have risen sharply and are now over 350kt, nearly double the inventory on the LME. China's bonded warehouse stock reduced for the second consecutive month to 380kt in February 2016, before increasing significantly to 500kt in mid March. A negative arbitrage between SHFE and LME prices, combined with sufficient

supply in domestic market has led the increase. The SRB ordered about 150kt in January 2016 from top 8 smelters for delivery in three months. The proposed move may continue this near-term tightness in Q2'16.

Figure 59: Visible global copper inventories



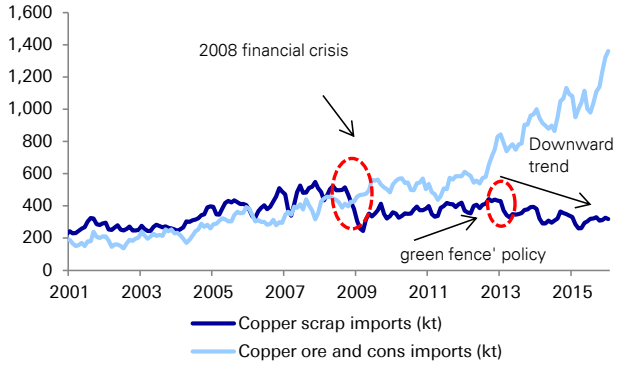
Source: Deutsche Bank, Bloomberg Finance LP

The rise in Chinese refined metal stocks points to a liquidity and arbitrage restocking event

The Chinese scrap market is likely to remain tight…price dependant

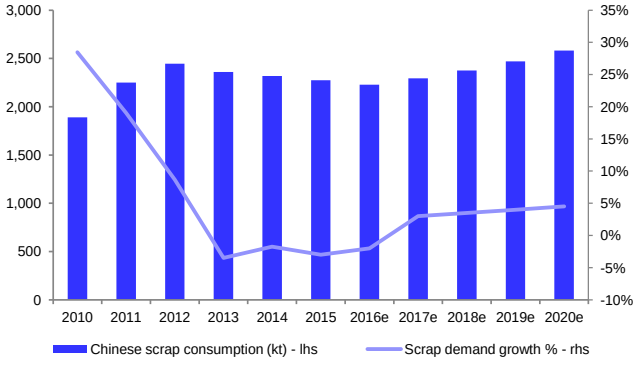
According to the latest trade statistics, imports of copper scrap into China in January were 273kt. This figure represented a 28% fall on the previous month's figure and a decline of 11% on the same month in 2015. The Chinese scrap market remained subdued with tight supply and limited buying interest from secondary smelters and semi fabricators ahead of the Lunar New Year holiday. The No.2 scrap spread widened slightly from the exceptionally narrow levels seen during January to reach around 2000-2200 RMB/t (14 to 15c/lb) in the last week of February. However, this remains insufficient to stimulate significant buying interest amongst users of secondary materials. The availability of copper scrap in China may improve to some extent in the coming months if new subsidies available to Waste Electrical and Electronic Equipment (WEEE) recyclers that came into force in January are successful in improving operating rates at disassembly yards. The slightly stronger copper price seen during the last month may encourage some traders to begin selling their stock of secondary materials accumulated during Q4 2015. So far, concentrate remains the preferred source of copper units into China.

Figure 60: Decrease in Chinese scrap imports vs increase in copper concentrate imports



Source: Deutsche Bank, NBS

Figure 61: Another year of declining scrap consumption in China before growth



Source: Deutsche Bank, Wood Mackenzie

Downgrading the long term price

Phased development of Kamoa project Ivanhoe Mines has released details of a positive pre-feasibility study into the first phase of development at its Kamoa project in the Democratic Republic of Congo. The study envisages a $1.2Bn investment in a 3Mt/a underground mine and milling operation. Production capability is rated to average 100kt/a of copper in concentrate over a 24-year life of mine. Initial mine development work was reported to have commenced in July 2014 and it is now understood that concentrate production is targeted for 2019. Production from the first phase of the Kamoa project is now included in our probable category. A second phase of the Kamoa project could potentially entail an expansion of the mine and mill and construction of a smelter to produce blister copper. Under plans outlined in a 2013 preliminary economic assessment (PEA), this option would increase the overall production capability of Kamoa to 300kt/a. This incremental production is now included as a possible project. Ivanhoe Mines owns a 49.5% interest in a company named Kamoa Holding Limited. Zijin Mining purchased a 49.5% interest in Kamoa Holding for $412M in a deal that was finalised in December 2015. The remaining 1% interest is currently held by an entity called Crystal River Global Limited, but can be acquired by Zijin upon successful arrangement of project financing. Kamoa Holding has a 95% stake in the Kamoa project with the government of DRC holding the remaining 5%. Ivanhoe has offered to transfer an additional 15% interest to the DRC government on terms to be negotiated.

Carrapateena update OZ Minerals has provided an update on its Carrapateena project in South Australia. The company intends to undertake a prefeasibility study based on a A$770M ($560M) development option involving a 2.8Mt/a sub-level cave (SLC) mine feeding a concentrator located at the Carrapateena site. An option involving a 250km rail link to the company's existing facility at Prominent Hill was determined to be uncompetitive. The process flow sheet will include a hydro-metallurgical step to increase the copper content of the concentrate produced and strip out deleterious elements including uranium. The proposed project is rated to have an average production capability of 40kt/a of copper in concentrate and 38koz/a of gold over a mine life exceeding 20 years. The company intends to complete the pre-feasibility study by Q4 2016 with a view to making a decision to proceed by Q1 2017.

Golpu feasibility study Harmony Gold has announced the results of a feasibility study into the initial stage of development of the Golpu project in Papua New

Guinea. The study envisages a $2.64Bn investment in the development of two block caves and a milling operation with a throughput of 6Mt/a. The project is rated to have an average production capability of 80kt/a of copper in concentrate and 128koz/a of gold over a 28 year life of mine. A prefeasibility study into a potential second phase of development at the site has also been completed. This project would first involve de-bottlenecking the 'Phase 1' project to attain throughput rates of 7Mt/a before constructing a new process plant to increase overall throughput to 14Mt/a and a new block cave mine to extend the mine life to 35 years. The capital cost of the 'Phase 2' expansion project is estimated at $1.26Bn. This will raise average incremental production capability of 50kt/a of copper in concentrate and 74koz/a of gold. The company states that the project will only progress into execution upon the granting of a Special Mining Lease (SML) which will include all necessary permits, approvals and consents required from the Papua New Guinea Government, landowners and other relevant stakeholders. Harmony and Newcrest Mining each currently own 50% of the project. The government of Papua New Guinea retains the right to purchase an equity interest of up to 30% at any time before the commencement of mining.

Incentive pricing remains higher than spot

We have reviewed our model of 47 copper projects, totaling 8.5Mt of copper production or 10.4Mt of copper equivalent production. 25 of these projects are Greenfield and 22 are brownfield. The average "new" copper mine size is 181ktpa, at an average capex intensity of c.USD15,000/t, and costing USD3.1bn. The average cash cost is 174c/lb pre by-products and 120c/lb post by-products. We have tended to sample the larger projects and have not included too many "by-product" mines. The average cash cost of our sample is in line with the current median C1 cash cost. Given we expect oil prices to recover, but managements to continue squeezing costs out, we think this outcome passes the reasonable man test. We summarise the main parameters of the study in the table below:

Figure 62: Copper project summary

	Copper production (kt)	Copper equiv. production (kt)	Capex (US$m)	Capex intensity (US$/t)	Incentive price (c/lb)	Cash cost pre-by products (c/lb)	Cash cost post-by products (c/lb)
Total	8,500	10,387	144,107				
Average	181	221	3,066	14,910	292	174	120
High	648	1,058	9,000	26,273	415	295	195
Low	26	34	360	5,106	194	116	-6
Median	141	177	2,800	13,861	290	170	124

Source: Deutsche Bank, Wood Mackenzie

Recent project updates include; 1) Ivanhoe Mines pre-feasibility study into the first phase of development at its Kamoa project in the Democratic Republic of Congo. The study envisages a $1.2Bn investment in a 3Mt/a underground mine and milling operation. Production capability is rated to average 100kt/a of copper in concentrate over a 24-year life of mine. Initial mine development work was reported to have commenced in July 2014 and it is now understood that concentrate production is targeted for 2019. 2) OZ Minerals' update on its Carrapateena project in South Australia. The company intends to undertake a prefeasibility study based on a A$770M ($560M) development option involving a 2.8Mt/a sub-level cave (SLC) mine feeding a concentrator located at the Carrapateena site. An option involving a 250km rail link to the company's existing facility at Prominent Hill was determined to be uncompetitive. 3) Harmony Gold's feasibility study into the initial stage of development of the

Golpu project in Papua New Guinea. The study envisages a $2.64Bn investment in the development of two block caves and a milling operation with a throughput of 6Mt/a. The project is rated to have an average production capability of 80kt/a of copper in concentrate and 128koz/a of gold over a 28 year life of mine. A prefeasibility study into a potential second phase of development at the site has also been completed.

When we conducted this exercise in September 2014, we note that many projects have moved out by two to three years, due to a combination of permitting delays, the low copper price, community engagement or project re-engineering to reduce capex. Capex intensity has however decreased by 14% over this period, and the average cash cost post by-product credits has also decreased by 5c/lb, partly due to lower long term crude oil assumptions and lower currency assumptions. This means that our sample of new projects has a cash cost c.25c/lb lower that the previous incentive price curve.

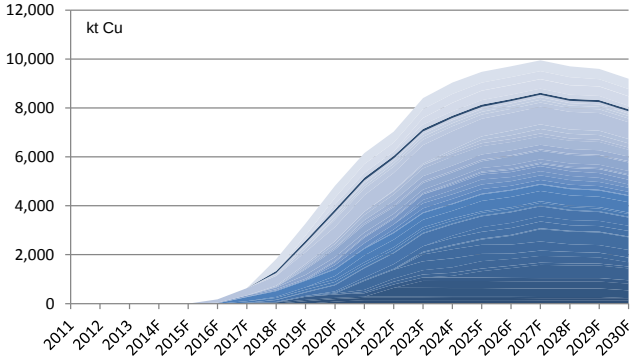
Figure 63: Changes to the main incentive price inputs since our last study

% change	Capex intensity	Cash cost pre-by prod	Cash cost post by-prod	Incentive price
High	-24%	-19%	-21%	-19%
Low		3%		
Median	-16%	-1%	-4%	-10%
Average	-14%	-3%	6%	-7%

Source: Deutsche Bank

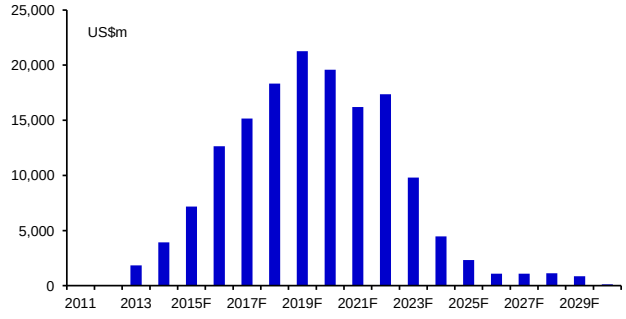
Our sample of projects has the potential to deliver 8.5Mtpa of copper production from 2025F, with a peak capex of USD21bn in 2019F should all the projects be built. The key point is that there is enough copper to satisfy global demand under most scenarios, with our admittedly limited sample able to provide the requirements.

Figure 64: Potential copper production growth over the next 15 years



Source: Deutsche Bank, Wood Mackenzie

Figure65: Capex profile of our sample of pre-development projects

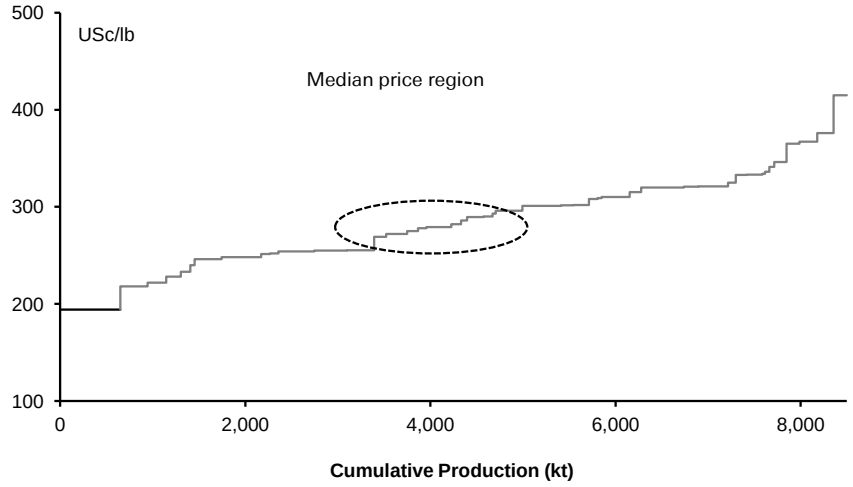


Source: Deutsche Bank, Wood Mackenzie

The project with the lowest incentive price in our sample is the Grasberg UG project in the Indonesia, and is also the biggest mine (648ktpa) in our sample.. The "next best" sizable projects are Pebble, Toquepala, Kamoa, Oyu Tolgoi UG expansion, El Teniente, Quellaveco and Chuquicumata UG. All these projects have incentive prices below 300c/lb. The irony is that of these projects, Pebble, Toquepala and Quellaveco have been delayed due to environmental / community concerns. Grasberg and Oyu Tolgoi UG developments have some

uncertainty due to "stability" or tax arrangements with the respective host governments, and the funding for El Teniente remains challenging despite the new funding imitative for Codelco from the Chilean government. This highlights the challenges of bringing a new copper mine to market. The median point on our curve is 290c/lb, or USD6,400/t.

Figure 66: Copper incentive price curve



Source: Deutsche Bank

The copper incentive price curve is fairly steep.

Figure 67: Deutsche Bank Copper demand – supply balance

		2010	2011	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Chile production	Mt	5.47	5.29	5.52	5.91	5.89	5.80	5.65	5.78	5.65	5.78	5.67
Production Growth		*0.3%*	*-3.3%*	*4.3%*	*7.0%*	*-0.3%*	*-1.5%*	*-2.5%*	*2.3%*	*-2.3%*	*2.4%*	*-2.0%*
Chile share of global production		*34%*	*33%*	*33%*	*33%*	*32%*	*30%*	*28%*	*27%*	*26%*	*27%*	*27%*
Global Mine Production	**Mt**	**16.14**	**16.15**	**16.78**	**18.17**	**18.64**	**19.29**	**19.56**	**20.16**	**20.33**	**20.46**	**20.64**
World Mined Production Growth	*%*	*1.4%*	*0.0%*	*3.9%*	*8.3%*	*2.6%*	*3.5%*	*1.4%*	*3.1%*	*0.8%*	*0.7%*	*0.9%*
Copper smelting capacity	Mt	17.49	17.96	18.74	19.66	20.36	21.48	21.82	22.50	23.03	23.03	23.14
Utilisation		*74%*	*72%*	*72%*	*75%*	*74%*	*73%*	*73%*	*73%*	*73%*	*74%*	*75%*
Anode production	Mt	14.92	15.59	15.87	16.59	17.61	18.08	18.30	18.87	19.15	19.46	20.01
Production Growth		*4.2%*	*4.5%*	*1.8%*	*4.6%*	*6.1%*	*2.7%*	*1.2%*	*3.1%*	*1.5%*	*1.6%*	*2.8%*
Total scrap consumption	Mt	4.20	4.53	4.78	4.63	4.44	4.43	4.36	4.54	4.64	4.73	4.84
Consumption Growth	*%*	*24.9%*	*7.7%*	*5.6%*	*-3.2%*	*-4.1%*	*-0.2%*	*-1.6%*	*4.3%*	*2.3%*	*1.9%*	*2.2%*
Total SxEw Production	Mt	3.1	3.3	3.4	3.5	3.6	3.7	3.7	3.7	3.6	3.5	3.2
Global Copper Supply	**Mt**	**18.94**	**19.73**	**20.15**	**20.81**	**21.76**	**22.25**	**22.61**	**22.98**	**23.15**	**23.36**	**23.83**
Global Supply Growth	*%*	*3.7%*	*4.2%*	*2.1%*	*3.3%*	*4.6%*	*2.3%*	*1.6%*	*1.7%*	*0.7%*	*0.9%*	*2.0%*
Chinese Consumption (real)	Mt	7.20	7.82	8.20	9.16	9.84	10.13	10.34	10.62	10.96	11.17	11.30
Consumption Growth	*%*	*10.8%*	*8.5%*	*5.0%*	*11.7%*	*7.3%*	*3.0%*	*2.1%*	*2.7%*	*3.2%*	*1.9%*	*1.2%*
Western Europe	Mt	3.40	3.20	2.93	2.94	3.09	3.12	3.20	3.25	3.23	3.22	3.21
growth	*%*	*11.4%*	*-6.1%*	*-8.2%*	*0.1%*	*5.2%*	*1.1%*	*2.3%*	*1.7%*	*-0.4%*	*-0.6%*	*-0.3%*
USA	Mt	2.19	2.20	2.22	2.29	2.33	2.36	2.40	2.39	2.34	2.35	2.36
growth	*%*	*6.5%*	*0.4%*	*1.0%*	*2.9%*	*1.8%*	*1.5%*	*1.5%*	*-0.4%*	*-1.9%*	*0.3%*	*0.3%*
Japan	Mt	1.06	1.00	0.98	0.99	1.05	1.03	1.04	1.03	1.00	0.98	0.96
growth	*%*	*21.1%*	*-5.4%*	*-1.8%*	*0.5%*	*6.1%*	*-2.0%*	*0.8%*	*-0.9%*	*-2.5%*	*-2.6%*	*-2.1%*
Big 3 mature economies	Mt	6.66	6.40	6.14	6.21	6.47	6.51	6.63	6.66	6.58	6.54	6.52
Consumption Growth	*%*	*11.1%*	*-3.8%*	*-4.1%*	*1.2%*	*4.1%*	*0.7%*	*1.8%*	*0.5%*	*-1.3%*	*-0.6%*	*-0.3%*
Other mature economies	Mt	1.57	1.37	1.21	1.22	1.16	1.16	1.13	1.17	1.16	1.15	1.14
growth	*%*	*4.6%*	*-12.8%*	*-11.4%*	*0.8%*	*-5.1%*	*0.4%*	*-2.3%*	*3.3%*	*-0.9%*	*-1.0%*	*-1.2%*
Other developing economies	Mt	1.35	1.36	1.34	1.33	1.39	1.47	1.51	1.57	1.64	1.72	1.80
growth	*%*	*10.0%*	*0.7%*	*-0.9%*	*-1.0%*	*4.4%*	*5.7%*	*2.7%*	*3.7%*	*4.8%*	*4.5%*	*4.9%*
Brazil/India/Russia Consumption	Mt	1.43	1.63	1.57	1.55	1.48	1.33	1.39	1.44	1.49	1.55	1.62
Consumption Growth	*%*	*12.0%*	*13.9%*	*-3.2%*	*-1.3%*	*-4.5%*	*-10.1%*	*3.9%*	*3.8%*	*3.5%*	*4.4%*	*4.2%*
Other	Mt	1.00	1.03	1.09	1.16	1.25	1.32	1.35	1.40	1.45	1.50	1.55
Consumption Growth	*%*	*14.6%*	*3.8%*	*5.3%*	*6.7%*	*7.8%*	*5.3%*	*2.3%*	*3.9%*	*3.6%*	*3.1%*	*3.2%*
Global Consumption	**Mt**	**19.20**	**19.60**	**19.56**	**20.64**	**21.59**	**21.93**	**22.35**	**22.86**	**23.28**	**23.63**	**23.92**
Global Consumption Growth	*%*	*10.6%*	*2.1%*	*-0.2%*	*5.5%*	*4.6%*	*1.6%*	*1.9%*	*2.3%*	*1.8%*	*1.5%*	*1.2%*
Market balance	**Mt**	**-0.26**	**0.14**	**0.58**	**0.17**	**0.17**	**0.32**	**0.25**	**0.12**	**-0.14**	**-0.27**	**-0.08**
Average LME cash price	USD/t	**7,498**	**8,829**	**7,953**	**7,354**	**6,846**	**5,512**	**4,619**	**4,725**	**5,223**	**5,722**	**6,220**
Average LME cash price	USc/lb	**340**	**401**	**361**	**334**	**311**	**250**	**210**	**214**	**237**	**260**	**282**

Source: Deutsche Bank, wood Mackenzie

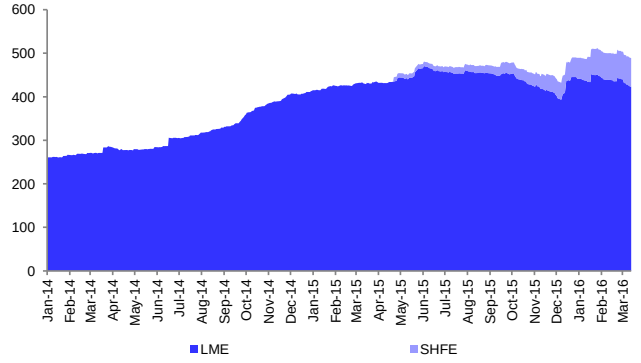
Nickel: The Malaise continues…

- Our doubts over the staying power of the current metal price rally notwithstanding, the fact that nickel has hardly benefitted (now down 3% year to date), is a testimony to the weak state of the fundamentals. There have been some signs of pressure induced closures, but simply not enough to stabilize the market. Our anticipation of further mine and refinery closures underpins our deficit forecasts of 105kt for 2016E and 140kt for 2017E. However, global inventories are estimated at over 1Mtpa, which means that deficits need to be significant or sustained over a number of years to tighten the market.
- A flurry of closures over and above our current expectations (we have mined supply contracting by 6%) could ignite sentiment in the short term. Given the large swathes of the industry under-water (w%), this should the case, but given the resilience up to now, we think this is a low probability. A more likely scenario is similar to most of the other metals, simply a starvation of capital. In the case of nickel, channel checks suggest that many of the smelter / refinery projects are being delayed with poor cashflows limiting investment. This may be part of the reason why there has been an increase in the "noise" about a reversal or a tempering of terms on the ore ban out of Indonesia. Whilst we think a complete reversal is unlikely, any watering down will not only be damaging to sentiment, but may also give some of the marginal Chinese nickel prig iron producers a bit of breathing space.
- Stainless steel demand has remained weak, and the start of 2016 has given us no indication that there will be a meaningful pick-up from a weak 2015. A trade case in the US will keep up the pressure on Chinese output, whilst European / US demand growth is likely to be low single digits at best. However, the modest growth that we have seen in the Western world has been fed by destocking. We think this comes to an end, and will be more supportive over the next two years. We forecast Nickel prices will remain below USD9,000/t for most of 2016E, rising to USD10,250/t in Q4 as closures gain momentum. We forecast a modest recovery in 2017E falling visible inventories improve sentiment.

No sign of an inventory draw down as yet.

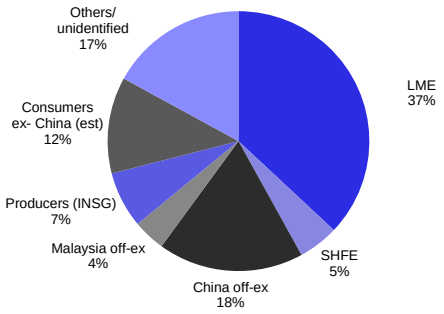
Although supply cuts have started to trickle through, they are nowhere near to a critical mass to tighten up the market. A build of stocks on the SHFE to underpin the new contract have seen visible stocks rise since the middle of 2015. It is only from the beginning of March that LME stocks have started to fall. Global implied nickel stocks equate to approximately six months of demand, with approximately half of that total on the LME and SHFE, the balance residing at off exchange locations in China and SE Asia, as well as in the yards of producers and consumers around the world. In China, reported stocks of nickel metal are around 180-190kt, including SHFE, bonded/private warehouses and other inventory. NPI stocks (estimated as 290kt gross by Antaike in January 2016) would amount to an additional 20-30kt contained nickel, depending on grade.

Figure 68: Visible exchange inventories have started to decline over the past two weeks



Source: Deutsche Bank, Bloomberg Finance LP

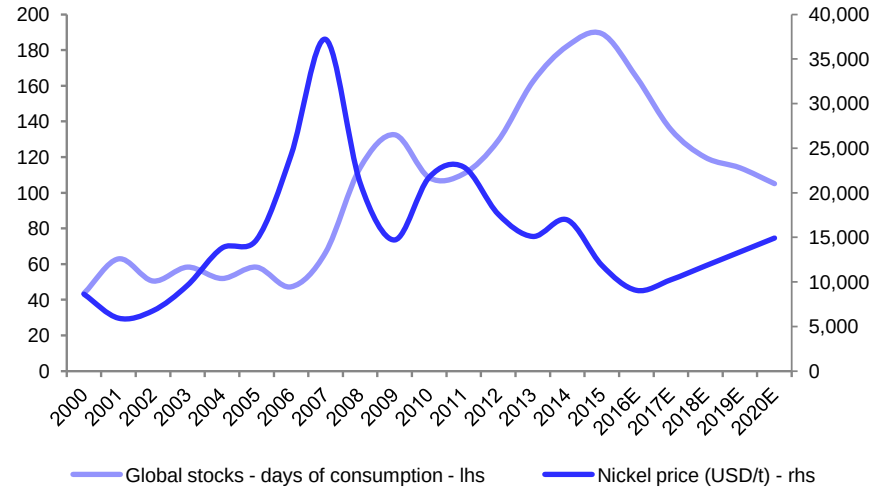
Figure 69: The global nickel stockpile is estimated at 1 – 2Mt or a 190 days of consumption



Source: Deutsche Bank, Wood Mackenzie

Global nickel stocks are in our view unlikely to fall close to the 100 days which is the level at which we expect to see price tightness until the end of the decade. The probability of stocks falling below 50 days, the level at which prices are likely to spike above USD30,000/t is extremely low in our view.

Figure 70: Nickel: global stocks in days of consumption



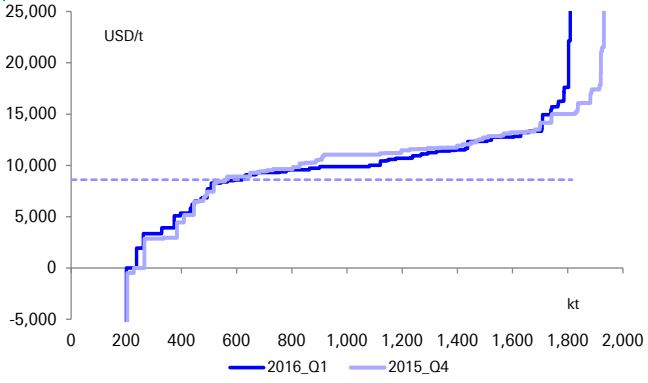
Source: Deutsche Bank, Wood Mackenzie

The drawdown of inventories is too slow for fundamental tightness to emerge.

The current price level of USD8,500/t is unsustainable in our view. At this level, about 60% of the industry is loss-making, and this includes most of the Chinese NPI producers. Historically many of the producers have held on, hoping that demand and prices would come to their rescue. We think this is unlikely in the short-term, and curtailments will be required to see any meaningful price improvement. Curtailments will be the catalyst for a recovery in prices, but so far the producers have steadfastly stayed open. Should the momentum in curtailments gather momentum, we expect a nickel price driven restocking rally and improving investor positioning to lead to a Q4'16 recovery. The recovery is likely to be short-lived and lose momentum into the first half of 2017.

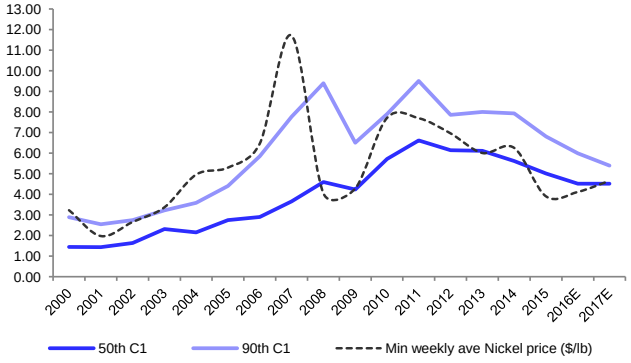
Over the past three years the minimum weekly nickel price has hugged the 50th percentile of the cost curve. The overshoot in 2014 was due to the Indonesian ore ban, and the undershoot this year has arguably been to the high visible inventories and investor fatigue. We would expect next year to be another undershoot year and our forecast for the average price is just above USD9,000/t which is below the 50th percentile of USD4.50/lb or USD9,900/t. In line with our forecasts that the deflationary cycle turning in 2017, we would expect the 50th percentile to remain constant. As high cost producers fall by the way side, or improve, we would expect the curve to flatten, and the gap between the 50th and 90th percentiles to narrow.

Figure 71: Comparing the Q1'16 to Q4'15 C1 cost curve



Source: Deutsche Bank, Wood Mackenzie

Figure 72: Minimum weekly nickel price on the cost curve since 2000



Source: Deutsche Bank, Wood Mackenzie

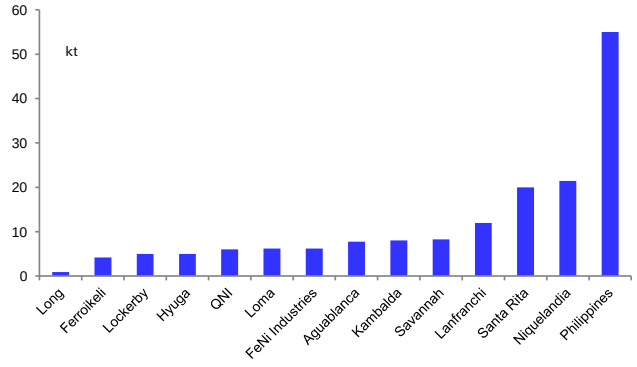
Supply curtailments remain a trickle so far

The flow of curtailments has continued over the past month with Sumitomo Metal Mining planning to reduce output by around 5,000 tpy at its Hyuga ferronickel smelter in Japan. The reduction is expected to take place from April of this year. The smelter is estimated to have produced 20,000 tonnes in 2015. The reduction will be achieved by closing one of the two furnaces at the smelter. The Yabulu refinery in Australia, owned by Australian politician Clive Palmer and operated through Queensland Nickel, is expected to remain closed until at least July 2016. The refinery was placed into voluntary administration last month, but late last week another company owned by Clive Palmer, Queensland Nickel Sales, regained control of the refinery, having reportedly raised US$17m to keep the refinery in operation. As refinery employees were employed by Queensland Nickel rather than Queensland Nickel Sales, the administrator had to terminate the contracts of all 550 workers. Before the refinery can recommence operations, Queensland Nickel Sales will need to rehire plant operators and secure all required government permits under the new company. We estimate this will remove at least 8kt from the market.

The curtailment brings closures outside of China to nearly 110ktpa. In mid-February, the Philippine Nickel Industry Association announced that its members would reduce production by 20% on their 2015 output. The association is made of up of mines in Zambales, Palawan and Surigao, but is understood to exclude Nickel Asia. The members are reported to account for around 60% of Philippine output. We calculate that a 20% cut in output would equate to around 55kt on a nickel contained basis.

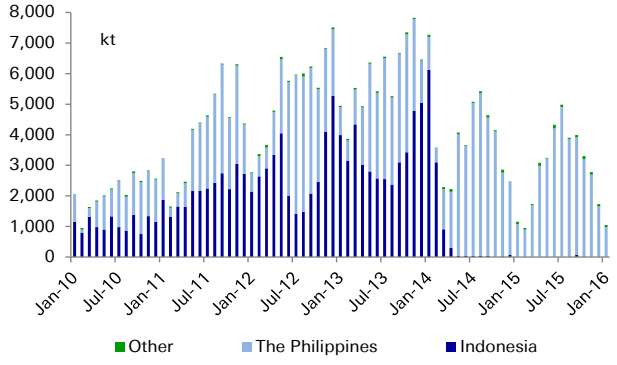
The decision by the miners is in response to the current low level of nickel ore prices. The price of 1.4% nickel ore is trading around $13/t fob Philippines, while 1.5% nickel ore is around $5/t higher at $18/t fob. The price of 1.6% nickel ore is around $23/t fob. If we include the Philippines, then the total cut is close to 170ktpa. We do not include all of these cuts in our forecasts, and the first impact is only likely in the April import stats in May. Shipments at this time of the year are monsoon affected.

Figure 73: Nickel supply cuts ex China



Source: Deutsche Bank, Company reports, CRU

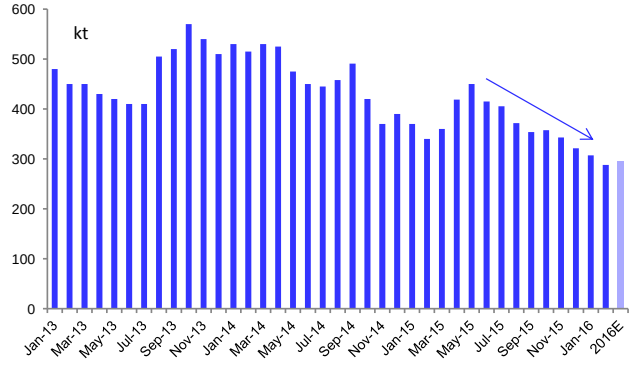
Figure 74: Philippine ore imports into China are at a seasonal low



Source: Deutsche Bank

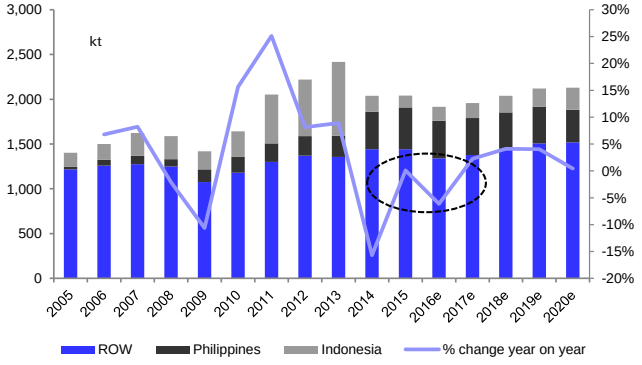
Chinese NPI production in February is estimated by SMM to have fallen to 24kt or 288kt annualised. This is the lowest level since 2011. The low level of NPI production has meant that many stainless mills are choosing to secure low-grade NPI to blend with primary nickel units. This is in line with our forecast, and suggests that producers are following through with the commitment to cuts made in December.

Figure 75: Chinese NPI production – monthly on an annualized basis



Source: Deutsche Bank, SMM

Figure 76: Global mined supply to decline by 6% in 2016E

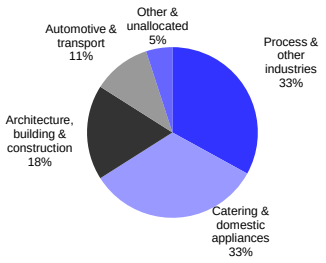


Source: Deutsche Bank, Wood Mackenzie

Stainless steel demand: Low single digit demand growth, with a weak start to the year

Many of the stainless steel / nickel demand indicators point to flat or low single digit growth over the next two years. The two main industries Process (Oil and gas and Chemicals) and Catering & domestic appliances account for 65% of global stainless steel demand in roughly equal proportion. We expect some weakness in the process industries for 2016, with a modest improvement in late 2017 for Oil & Gas in line with our improving oil price forecast. We forecast mid single digit demand growth in the consumer applications (Domestic appliance and Auto's), especially in China which account for c.40 – 45% of global stainless steel demand which should offset the weakness in the Process and Construction sectors.

Figure 77: Global stainless steel demand 2015

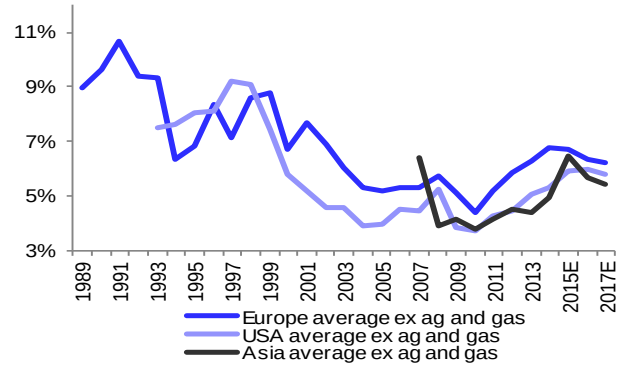


Source: Deutsche Bank, Wood Mackenzie

Our view rhymes with that of Outokumpu, who expect stainless steel demand to grow by c.3% per annum to 2019E. We forecast slightly lower growth averaging closer to 2.5% per annum. According to the company, the chemical, petrochemical and energy segments contracted by 2% amid retreating oil prices, whereas the automotive & heavy transport and consumer goods & medical segments were the most resilient, both at 3% growth in 2015 compared with 2014. Growth for the 2016-2019 period is likely to be driven mainly by increased consumption of around 3% per year in APAC, while demand in EMEA and the Americas is estimated to increase by around 1% year in both regions. The company expects growth to be broad-based between the end-use segments, with the consumer goods & medical and Architecture, Building and Construction & infrastructure segments showing the most robust annual growth of around 4% between 2016 and 2019. "The automotive & heavy industry and industrials & heavy industries segments are estimated to grow at average rates of 3% and 1%, respectively. Meanwhile, the chemical, petrochemical & energy segment is forecast to show no growth between 2016 and 2019.

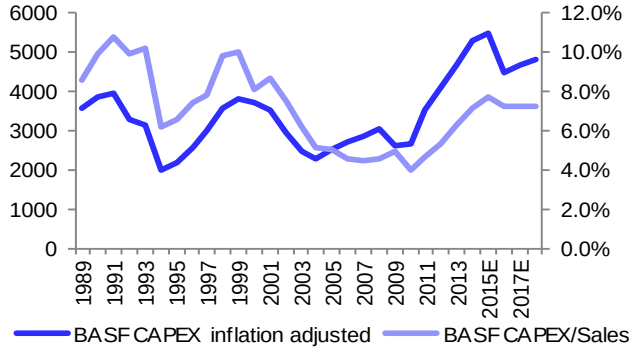
Our Pan European Chemicals think that we are past the capex "peak" and spend is now declining. Figure 78 shows capex/sales ran at an average of 5% from 2003-12 but has increased to an average of 6% 2013-15, with some larger programmes running several % points above this. However, we note that this increase is modest compared to history and well below the 9-11% level seen in the 1990s and that sector capex/sales is now coming down from 2015 onwards across all regions. Figure 79 shows BASF's absolute capex back to 1990 (inflation adjusted) and shows that it is spending broadly the same as in the early 1990s/2000s but for a materially bigger business. The team forecasts a modest capex increase decline of 1.3% after a 1.8% increase in 2015.

Figure 78: Europe & US Chemicals capex/sales 1989-2017E (ex gases, Ag)



Source: Deutsche Bank, Company data

Figure 79: BASF absolute capex (inflation adjusted, Euro m) and capex/sales

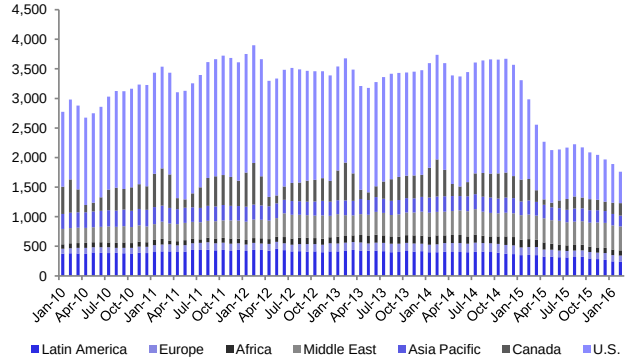


Source: Deutsche Bank, Company data

Both Aperam and Outokumpu agreed that their disappointing order books were attributable more to constrained purchasing from distributors rather than end user demand, which other than in the oil and gas (O&G) segment, continued to be reasonably healthy. For Outokumpu, the impact of low oil prices has continued to affect demand for its products from O&G, particularly long products (LPs), for which deliveries decreased by nearly 30% in Q4/15, and by 15% over the whole of 2015, to 213kt. We continue to see rig counts trending lower over the course of the year and it is only in 2017E that a pick up is likely.

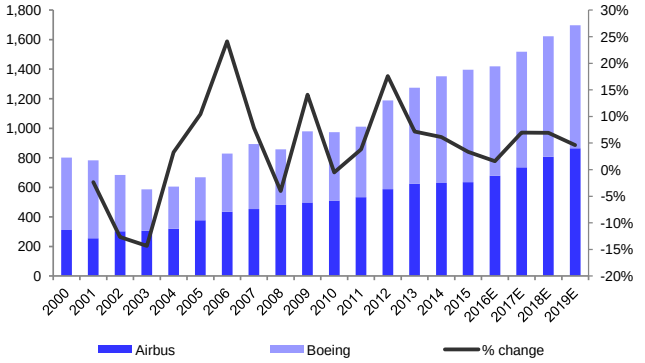
Most indications from aerospace companies are that recently enhanced aircraft build/delivery rates – especially those of commercial planes - will continue to rise in 2016-2017, thereby improving on the record deliveries established by Airbus and Boeing of 635 and 762, respectively, in 2015. Theoretically should mean an increase in demand for parts from OEMs that will translate into greater upstream demand for nickel alloy ingot from the melters. Both companies have noted a deceleration in orders which could be a portent of existing orders being cancelled. Our Aerospace team forecasts annual deliveries for both Airbus and Boeing increasing by an average of 4% until the end of the decade.

Figure 80: Global oil rig counts – declining counts in the US



Source: Baker Hughes, Deutsche Bank

Figure 81: Commercial aircraft deliveries – slowing but still positive until the end of 2020E

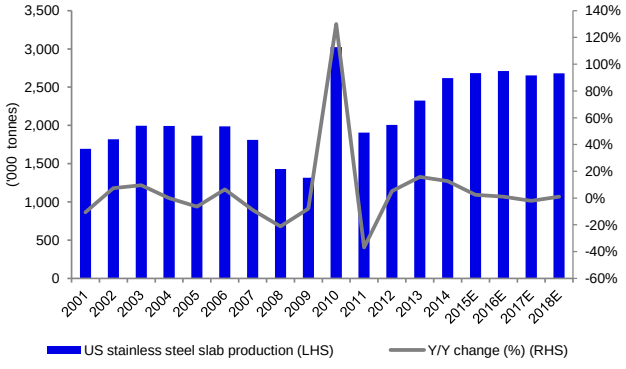


Source: Deutsche Bank, Company reports

The stainless steel sector has been negatively impacted by the sharp drop in commodity prices and although real demand continues to grow, particularly the drop in nickel has led to a destocking cycle along global supply chains. After a modest growth in 2015, we expect real demand to remain in positive territory in 2016. Although destocking in China remains a risk, we believe Western markets have advanced in the process of lowering supply chain inventories and thus, we expect a small acceleration of stainless slab production to 0.4% in 2016 from being flat in 2015. As anti-dumping action has intensified and also American producers started to lobby for trade protection against Chinese imports, we believe the American producers may be able to recover part of the ground lost to imports over the past two years.

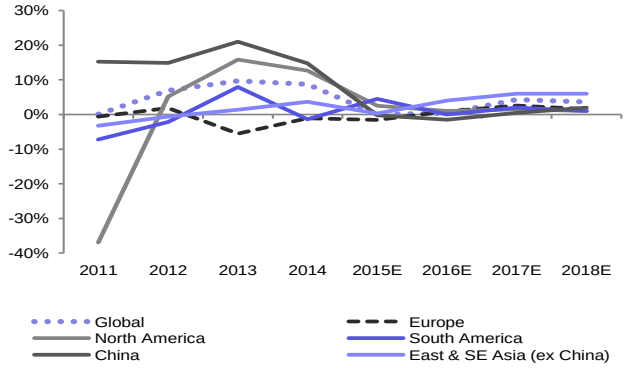
Falling nickel has been a drag across the globe, end of destocking drives production growth

Figure 82: US stainless steel slab production



Source: Deutsche Bank, CRU

Figure 83: Stainless production growth (y/y %) in key regions)



Source: Deutsche Bank, CRU

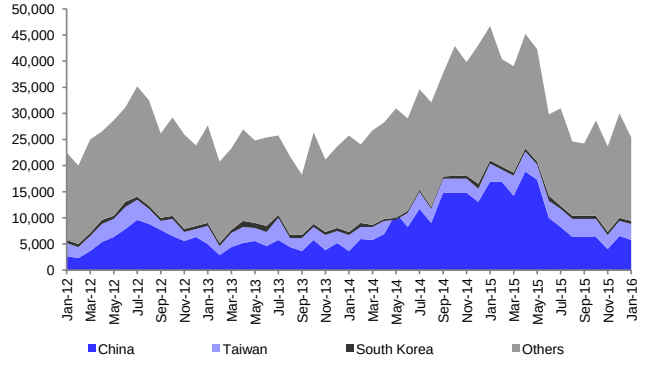
More specifically, end-use demand in Europe is broadly stable compared to last year, but demand is better in northern countries than in the south of the continent. There remains some stock overhang - particularly in Germany - that has shortened lead times. Buying activity should pick up in the second quarter, once de-stocking activity has ended. However, we would only expect distributors to increase orders to keep stock entry in line with sales, because of the continued uncertainty over the course of nickel prices.

In the US end-use demand is at broadly similar levels to last year, but the market finds itself in a transitional period. Following a lengthy de-stocking cycle in 2015, distribution sector inventories have now fallen to 2.9 months of shipments - a level that in recent years has been consistent with the bottom of stocking cycles. With the continued uncertainty over the course of nickel prices, service centres are likely to want to keep stocks at close to this level - or even lower.

We do however think that there was a clear divergence between real demand and apparent demand in both the US and Europe in 2015. While real demand continued to be positive driven by robust demand from sectors like automotive, construction and consumer durables, apparent demand remained muted as the incremental consumption was met by absorption of inventory which had been built up in 2014. This was largely driven by the decrease in nickel prices and apparent demand declined by 2.7% and 5.7% in Europe and the North America respectively. Destocking continued until end of 2015 and we believe inventories should be back to normal levels in Europe and below normal in the US. Additionally, we think particularly the North American market will benefit from the recently launched anti dumping case against China (while we have seen most of the volume benefit in Europe in 2015). On the other side, leading indicators point towards as weaker real demand in the US in 2016. Overall, we forecast stainless production to grow by 0.9% and 1.0% in Europe and North America respectively.

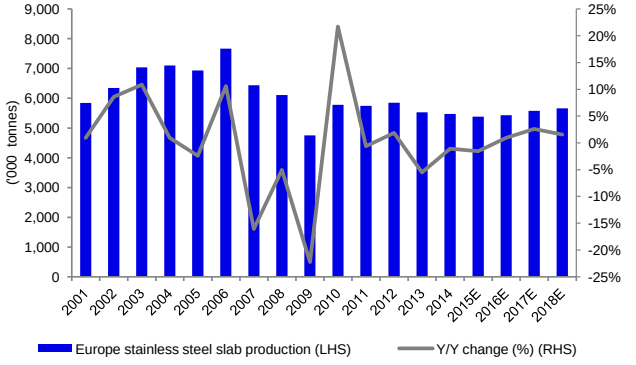
Chinese cold-rolled imports jumped in late 2014 and in the first half of 2015, and were equivalent to around 40% of all US cold-rolled imports at their peak in early 2015. Although they have now fallen (to around 6,000 tonnes in January), Chinese material still accounted for around 25% of all imports in January.

Figure 84: US cold-rolled sheet and coil imports by source (tonnes)



Source: Deutsche Bank, CRU

Figure 85: European stainless steel output to remain relatively flat over the medium term

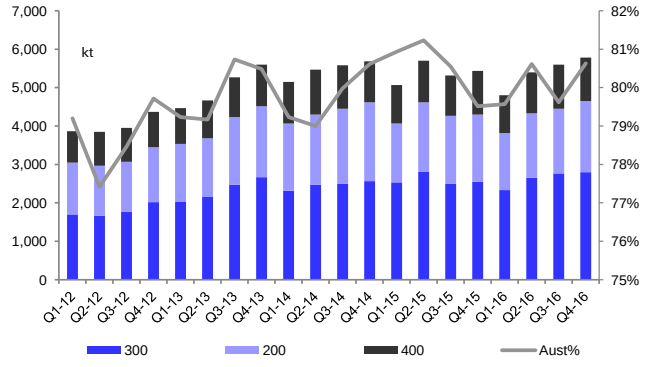


Source: Deutsche Bank, Wood Mackenzie, CRU

Chinese stainless steel demand started to increase after the New Year holidays. Mills and processors are busy with orders and some seasonal re-stocking is taking place. Nevertheless, many rerollers are still operating at low capacity utilisation rates as integrated mills continue to squeeze their margins. The recent announcement by the Stainless Steel Council of China Special Steel Enterprises Association (CSSC) estimated that Chinese stainless melt output in 2015 decreased by around 130kt, to 21.6Mt, which was in line with our c.1% contraction estimate. Chinese apparent demand grew with healthy 3% yoy in

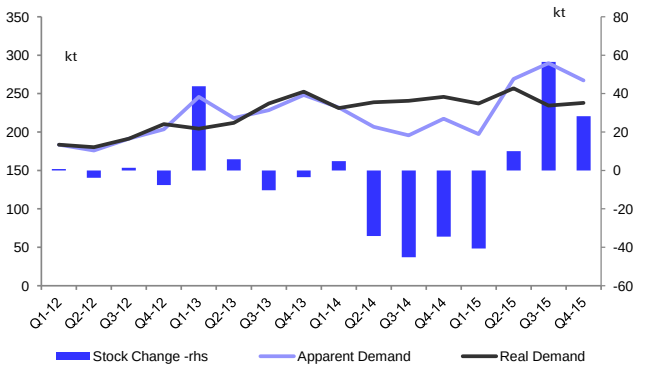
the first nine months of 2015 before decelerating to -3% in Q4. As domestic demand continues to be slow, downstream inventories in Stainless steel remain high and Chinese exporters face an increasing push-back via anti dumping action in Western markets, we expect stainless production to be roughly flat in 2016 and would not rule out further downside risk to our numbers, should the planned stimulus programs fail to have the hoped effect. Elevated downstream inventory levels provide further risk on the downside. The low nickel price has however meant that the mix of grades favours Austenitic resulting in nickel demand outstripping the stainless growth by 10 – 20bps. Trade flow data would indicate that China rebuilt nickel stocks in the last two quarters of last year.

Figure 86: Chinese stainless moves toward Austenitic steel



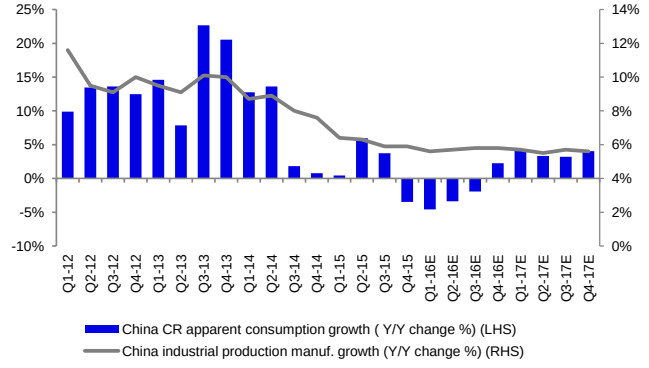
Source: Deutsche Bank, Wood Mackenzie

Figure 87: Chinese rebuild of nickel stocks



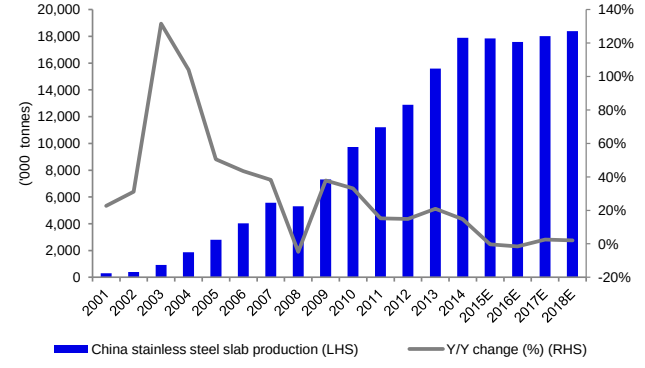
Source: Deutsche Bank, Wood Mackenzie

Figure 88: China stainless CR apparent consumption vs. IP growth



Source: Deutsche Bank, CRU

Figure 89: China stainless steel slab production

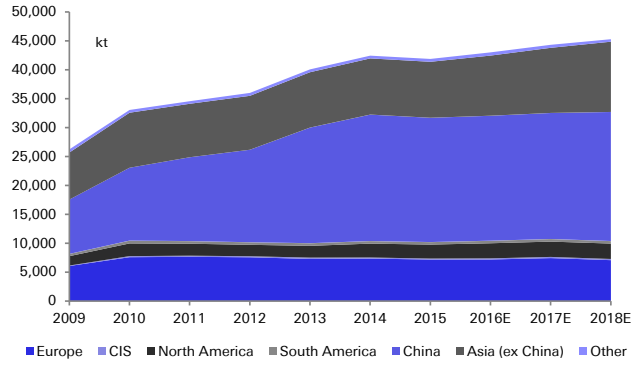


Source: Deutsche Bank, CRU

In Europe, market participants have reported that lower scrap availability is adding to additional demand for nickel units. The tightness in scrap is understood to be due to a number of factors: some players holding back scrap in anticipation of higher prices, less collection of scrap at the low nickel prices and more favourable economics of exporting the scrap to other countries like India due to higher cost of domestic transportation. CRU assesses the discount for nickel in stainless scrap to have decreased slightly to 86% in March from around 84% at the start of the year.

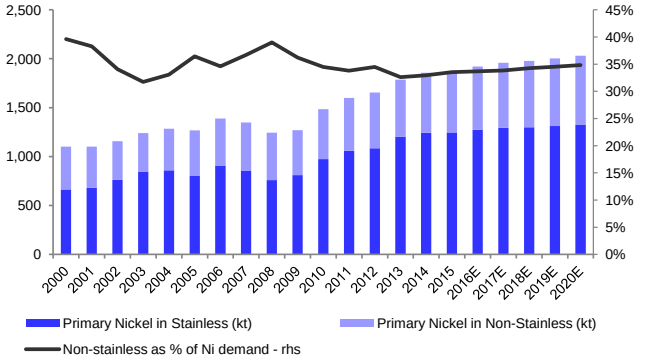
The net result is that we forecast modest demand growth (CAGR of 2.5%) for stainless steel over the remainder of the decade. The growth is likely to be driven by Asia (ex China) with limited growth from China itself. Given the low prices, we would expect the Austenitic ratio to stay at 75%, which in turn infers that the fade in stainless steel nickel content will be limited. Scrap is expected to remain tight for the rest of 2016E, but should recover as part of the stainless steel feedstock over the course of the decade as prices improve.

Figure 90: Global stainless steel melt



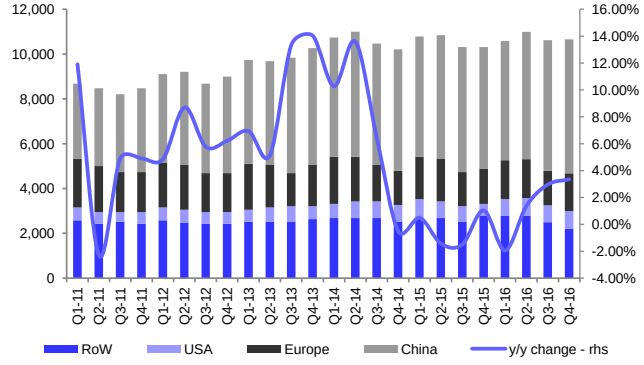
Source: Deutsche Bank, CRU, Wood Mackenzie

Figure 91: Nickel demand in stainless steel and non-stainless steel applications



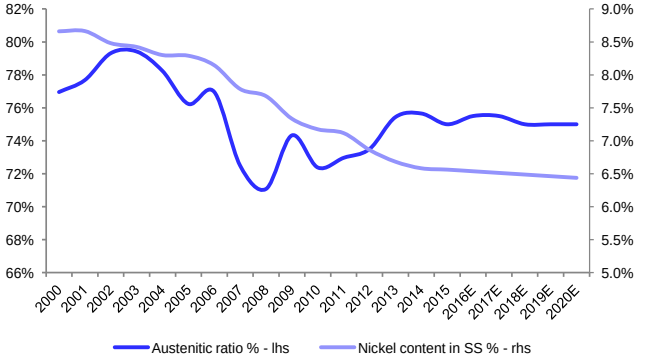
Source: Deutsche Bank

Figure 92: Quarerlty stainless steel output by region



Source: Deutsche Bank, CRU, Wood Mackenzie

Figure 93: Austenitic stainless as part of the global mix



Source: Deutsche Bank, Wood Mackenzie

Figure 94: Deutsche Bank Nickel supply –demand balance

		2010	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
Australia mine production	kt	180.9	191.2	237.3	230.9	209.1	190.3	165.5	161.2	176.2	175.2	179.1
Production growth		*2.7%*	*5.7%*	*24.1%*	*-2.7%*	*-9.4%*	*-9.0%*	*-13.0%*	*-2.6%*	*9.3%*	*-0.6%*	*2.2%*
New Caledonia mine production	kt	130	129	138	152	183	177	187	204	214	236	241
Production growth		*40.0%*	*-0.5%*	*7.1%*	*10.2%*	*20.0%*	*-3.3%*	*5.9%*	*9.1%*	*5.0%*	*9.8%*	*2.3%*
Canada mine production	kt	154.7	215.3	200.3	222.5	225.4	225.2	230.8	227.5	226.6	226.6	223.3
Production growth		*18.7%*	*39.1%*	*-6.9%*	*11.1%*	*1.3%*	*-0.1%*	*2.5%*	*-1.4%*	*-0.4%*	*0.0%*	*-1.4%*
Russia mine production	kt	278.8	276.5	243.1	225.2	221.3	226.4	219.2	205.7	210.2	216.1	217.7
Production growth		*2.7%*	*-0.8%*	*-12.1%*	*-7.4%*	*-1.8%*	*2.3%*	*-3.2%*	*-6.2%*	*2.2%*	*2.8%*	*0.7%*
Brazil mine production	kt	55.0	95.4	125.6	94.9	116.7	96.5	67.7	69.7	93.7	102.2	109.2
Production growth		*24.7%*	*73.4%*	*31.7%*	*-24.5%*	*23.0%*	*-17.3%*	*-29.9%*	*3.0%*	*34.4%*	*9.1%*	*6.9%*
Indonesia mine production	kt	285.8	546.3	631.3	825.4	179.0	130.6	155.4	167.3	185.6	205.6	245.6
Production growth		*41.3%*	*91.2%*	*15.5%*	*30.7%*	*-78.3%*	*-27.1%*	*19.1%*	*7.7%*	*10.9%*	*10.8%*	*19.5%*
Philippines mine production	kt	175.1	205.9	220.0	236.0	417.1	466.8	420.4	413.6	407.8	407.8	365.8
Production growth		*23.7%*	*17.6%*	*6.8%*	*7.3%*	*76.7%*	*11.9%*	*-9.9%*	*-1.6%*	*-1.4%*	*0.0%*	*-10.3%*
Estimated Ni in Ore - for Ni Pig Iron	kt	356.0	651.9	750.0	944.8	451.8	458.4	430.3	425.6	427.6	447.6	445.6
Production growth		*41.1%*	*83.1%*	*15.0%*	*26.0%*	*-52.2%*	*1.5%*	*-6.1%*	*-1.1%*	*0.5%*	*4.7%*	*-0.4%*
World mine production - base case	**kt**	**1,641**	**2,053**	**2,220**	**2,418**	**2,038**	**2,040**	**1,995**	**2,026**	**2,099**	**2,161**	**2,162**
World mine production growth rate		*15.6%*	*25.1%*	*8.1%*	*8.9%*	*-15.7%*	*0.1%*	*-2.2%*	*1.6%*	*3.6%*	*3.0%*	*0.0%*
Possible projects					**0**	**0**	**0**	**0**	**13**	**24**	**46**	**54**
Disruption allowance						**0**	**0**	**-80**	**-81**	**-84**	**-86**	**-86**
Total world mine production	**kt**	**1,641**	**2,053**	**2,220**	**2,418**	**2,038**	**2,040**	**1,915**	**1,958**	**2,038**	**2,121**	**2,130**
Total Smelter output	**kt**	**1,504**	**1,677**	**1,802**	**2,016**	**1,985**	**1,904**	**1,899**	**1,924**	**1,973**	**1,950**	**1,948**
Implied smelter recovery	%	*92%*	*82%*	*81%*	*83%*	*97%*	*93%*	*99%*	*98%*	*97%*	*92%*	*91%*
Total refinery capacity	**kt**	**2,152**	**2,544**	**2,849**	**3,021**	**3,093**	**3,093**	**3,164**	**3,038**	**3,038**	**3,038**	**2,983**
Implied utilisation	%	*68.1%*	*64.6%*	*61.6%*	*66.0%*	*64.3%*	*62.1%*	*57.4%*	*59.8%*	*62.5%*	*65.2%*	*66.7%*
Base case refinery output	**kt**	**1,465**	**1,643**	**1,756**	**1,993**	**1,989**	**1,921**	**1,815**	**1,789**	**1,778**	**1,801**	**1,781**
Possible projects						*0*	*0*	*0*	*29*	*120*	*180*	*209*
Total refined availability / Output	**kt**	**1,465**	**1,643**	**1,756**	**1,993**	**1,989**	**1,921**	**1,815**	**1,818**	**1,898**	**1,981**	**1,990**
World refined availability growth rate		*9.2%*	*12.1%*	*6.9%*	*13.5%*	*-0.2%*	*-3.4%*	*-5.5%*	*0.2%*	*4.4%*	*4.3%*	*0.5%*
Implied Refinery recovery from mined ou	%	*89.3%*	*80.0%*	*79.1%*	*82.4%*	*97.6%*	*94.2%*	*94.8%*	*92.9%*	*93.1%*	*93.4%*	*93.4%*
Global stainless production	mt	33.0	34.6	36.0	40.1	42.4	41.9	43.0	44.3	45.3	46.3	47.3
Growth		*26.0%*	*4.6%*	*4.2%*	*11.3%*	*5.9%*	*-1.3%*	*2.7%*	*3.0%*	*2.2%*	*2.2%*	*2.2%*
Austenitic stainless demand	mt	23.9	25.2	26.8	30.2	32.1	31.9	32.5	33.4	34.0	34.7	35.5
Austenitic ratio		*72.4%*	*73.0%*	*73.5%*	*75.4%*	*75.7%*	*75.0%*	*75.5%*	*75.5%*	*75.0%*	*75.0%*	*75.0%*
Total nickel demand for stainless	kt	1,716	1,794	1,840	2,019	2,113	2,130	2,122	2,178	2,203	2,242	2,282
Nickel content		*7.2%*	*7.1%*	*6.9%*	*6.7%*	*6.6%*	*6.6%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.4%*
Nickel scrap consumption	kt	743	735	756	816	869	884	849	882	903	930	958
Scrap ratio		*43.3%*	*41.0%*	*41.1%*	*40.4%*	*41.1%*	*41.5%*	*40.0%*	*40.5%*	*41.0%*	*41.5%*	*42.0%*
Primary Nickel in Stainless	kt	973	1059	1084	1203	1244	1247	1273	1296	1300	1312	1324
Primary Nickel in Non-Stainless	kt	512	541	571	583	612	629	647	663	677	692	707
Total world nickel consumption	**kt**	**1,485**	**1,599**	**1,655**	**1,786**	**1,855**	**1,876**	**1,920**	**1,959**	**1,976**	**2,004**	**2,031**
World nickel consumption growth	%	*16.9%*	*7.7%*	*3.5%*	*7.9%*	*3.9%*	*1.1%*	*2.4%*	*2.0%*	*0.9%*	*1.4%*	*1.4%*
Adjustments												
Balance	**kt**	**-19.7**	**43.4**	**101.5**	**207.5**	**133.0**	**45.6**	**-105.1**	**-140.7**	**-78.0**	**-23.0**	**-41.0**
Reported stocks	kt	136.9	90.5	139.9	261.6	407.0	452.6	347.4	206.8	128.8	105.8	64.7
Stock to consumption ratio	w ks	4.79	2.94	4.40	7.62	11.41	12.55	9.41	5.49	3.39	2.75	1.66
Annual Average Prices	**USD/t**	**21,745**	**22,888**	**17,591**	**15,102**	**16,955**	**11,864**	**9,063**	**10,250**	**11,808**	**13,367**	**14,925**
Annual Average Prices	**USD/lb**	**9.87**	**10.38**	**7.98**	**6.85**	**7.69**	**5.38**	**4.11**	**4.65**	**5.36**	**6.06**	**6.77**

Source: Wood Mackenzie, Deutsche Bank

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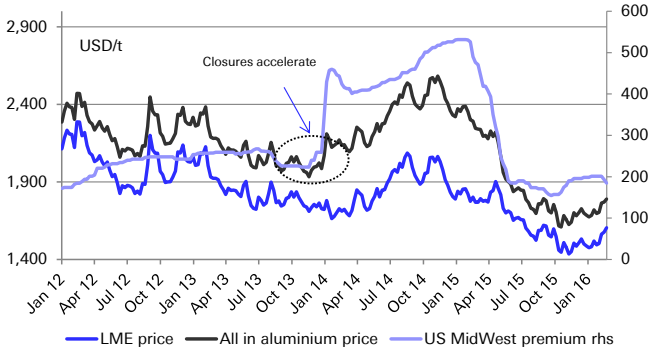
Aluminium: A tenuous balance for now

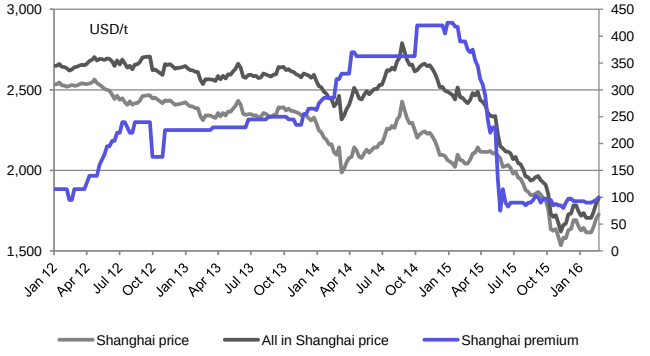
- Post the rapid rate of Chinese smelter cuts that gained momentum in Q4'15, the aluminium market looks more or less balanced; this despite our expectation of global demand growth easing lower over the next few years. We think global demand growth will be lower than the long-term trend of 3.9% as Chinese demand growth continues to slow below 5%. It is however difficult to build a bull case based on Chinese discipline holding in the face a steady price appreciation. That being said, the flush of liquidity in China, and a near-term pick-up in property investment could see prices on the LME breach USD1,600/t. We would however view this as an opportunity to sell, as capacity re-activations in China will not be far behind.
- Aluminium prices are up 5% year to date and 10% since the mid December lows. The appreciation of the oil price and domestic Chinese coal prices have certainly dispelled the view of one way deflation in the aluminium industry pulling down and flattening the cost curve. We would argue that the deflationary cycle in the metals sector is nearing an end, with energy prices close to the bottom. However, producer currency depreciation, especially the CNY still remains a risk. However in the case of aluminium, improving current efficiencies form the Chinese producers remains a deflationary force over the next few years, which could offset any further energy price inflation.
- A structurally oversupplied Chinese domestic market in tandem with improving energy efficiencies, suggests that aluminium prices will remain under pressure, or capped on the upside at best over the medium-term. A recovery in the oil price will drag up all energy prices over time, and with this will counteract the efficiency gains from technology improvements. However, there are four potential catalysts that could drive sustained upward pressure on the price. These include a structural acceleration of aluminium demand growth in China; a change in the tax regime which effectively "traps" Chinese aluminium in the country; a re-pricing of energy in China due to carbon emission taxes or a squeeze on the bauxite market. None of these catalysts seem likely in the very near-term.

Figure 95: All-in aluminium price ex China



Source: Deutsche Bank, Bloomberg Finance LP

Figure 96: Chinese domestic aluminium price



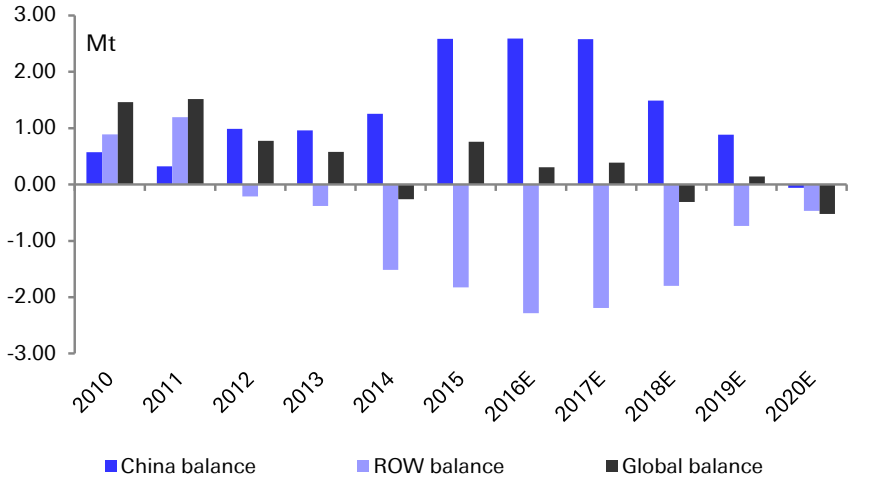
Source: Deutsche Bank, Bloomberg Finance LP

The fundamental picture remains unchanged: China will continue to supply the rest of the world

After adjusting our supply demand balance for lower global growth and allowing for slower capacity creep in China, we do arrive at a more balanced market for the next few years. However, the fundamental picture for aluminium remains unchanged in our assessment. The Chinese aluminium

market remains over-supplied whilst the world ex China is in a deficit. China will continue to supply the rest of the world with increasingly "cheap to manufacture" aluminium which at the moment is leading to a balanced market. Any surge in demand outside of China, or any supply cuts outside of China is likely to result in an arbitrage via premiums. This arbitrage will be whittled away through Chinese exports.

Figure 97: Aluminium supply – demand balance: China versus the world ex China



Source: Deutsche Bank, Wood Mackenzie

There are four scenarios which could break this situation, and lead to a sustained rally in prices: The first scenario is a re-acceleration of Chinese demand, which leads to a sharp increase in smelter utilization. This has in part been the case in the short-term with a modest recovery in the property sector, but we do not see this as sustainable over the medium term, The second scenario would be a change in China's tax regime, where the export rebate on semi's is removed and an export duty of similar to that on primary aluminium is applied. This in our view is highly unlikely as China's aluminium industry will lose a vital relief valve in exporting over capacity. The third and more likely scenario is if energy in China is effectively re-priced. Post the widespread restructuring of the coal industry in China and the opening up the Xinjiang region, the country is no longer short of cheap energy. The imposition of a carbon tax, which is on the cards will push up the cost of Chinese production, pushing up prices. Again, this is unlikely in the short-term. The last possibility is if there is a squeeze on bauxite or alumina supplies which introduces some cost push inflation into the equation. The increase in Malaysian, Australian and Guinean bauxite since the Indonesian ban has highlighted the abundance of bauxite globally. There has been an increase in Indonesian rhetoric that the country may consider modest ore exports, if certain investment criteria are met. Additional transport costs may introduce some modest inflation for the marginal Shandong refinery, but nothing that will break this trend.

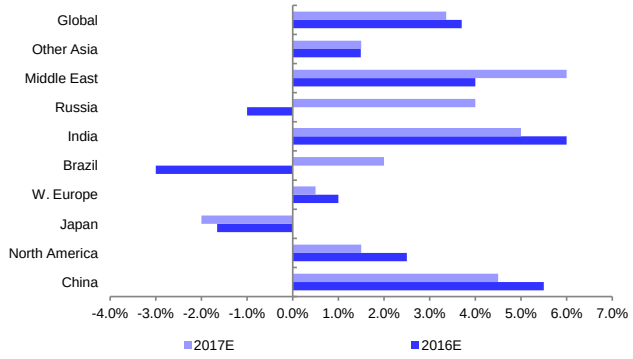
China is due to implement a Carbon emission trading programme across the entire country in 2017. A pilot trading scheme was launched in the five major cities of Beijing, Shanghai, Tianjin, Shenzen and Guangdong in 2013 with a further two cities; Hubei and Chongqing in 2014. The current trading volume is still small, but the unit price is expected to rise to RMB45-55/t versus the current price of around RMB30/t. This is estimated to add c. 550-600RMB/t onto Chinese smelting costs. Given the mixed success of carbon trading

schemes elsewhere, the implementation and monitoring will be key. However, this is potentially the most credible catalyst for medium term price appreciation.

Demand growth to ease lower over the next two years

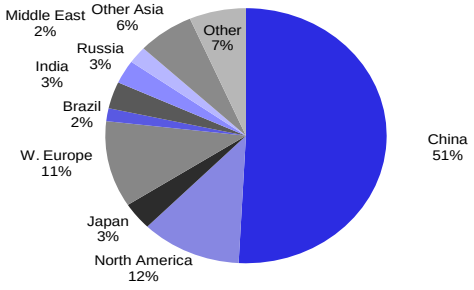
Aluminium demand growth slowed sharply in 2015 to 4.3% (versus 7.3% in 2014), mainly due to the Chinese property and manufacturing sectors. We forecast the global growth rate to slow further to 3.7% and 3.4% in 2016E and 2017E respectively. There is no reason to expect a sharp rebound, as much of the slowdown in 2015 was due to the structural slowdown in China. However, the slowing demand growth is not only due to China, we also forecast slowing demand in two of the other main regions of North American, Asia ex China, Japan and India and Western Europe. Although the combination of Russia, Brazil and Japan only account for 8% of global demand, we forecast demand contractions in each of these regions too.

Figure 98: Global demand growth is forecast to ease lower after a dramatic slowdown in 2015



Source: Deutsche Bank, Wood Mackenzie

Figure 99: Global aluminium demand by region: 2016E



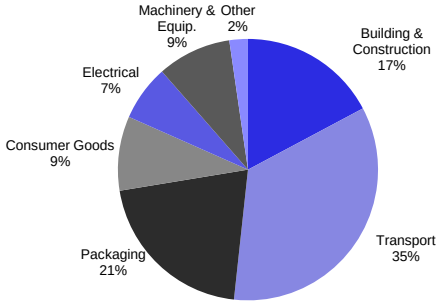
Source: Deutsche Bank, Wood Mackenzie

Focusing on the main three regions of demand, we forecast slowing demand in North America to be driven by a plateau in US Auto sales. Signs of moderation in used vehicle pricing as supply continues to come into the market from off-lease vehicles and an overall growing population of used vehicles (population of vehicles <5 yrs old will increase 10% this year) is a lead indicator for weaker Auto market conditions. In February, the Manheim Used Vehicle Value Index, which represents wholesale used vehicle prices declined at its fastest pace in more than three years. Added to this, three factors could result in somewhat tighter industry conditions: 1) Cost of credit; 2) Delinquencies rising; and/or 3) Indications of higher loss severity (i.e. used car prices falling). All three of these factors have moved in a slightly adverse direction recently. While they have not yet affected market behavior, it is clear that credit conditions are very loose (27% of loans are 73-84 months; 29% of originations are below prime; 31% of transactions involve leases) and compound the view that the most ideal conditions are behind us now. The weaker outlook in the US Auto sector will be offset by a better fundamental outlook for the housing market which remains supportive of metal demand growth. Attractive borrowing costs, low unemployment, rising household formation and a significant supply backlog point to a steady upward trend for housing this year.

There has been a slow start to the year for European demand with falling orders from aluminium fabricators during the past two months. Regional manufacturing activity in February registered the lowest reading since

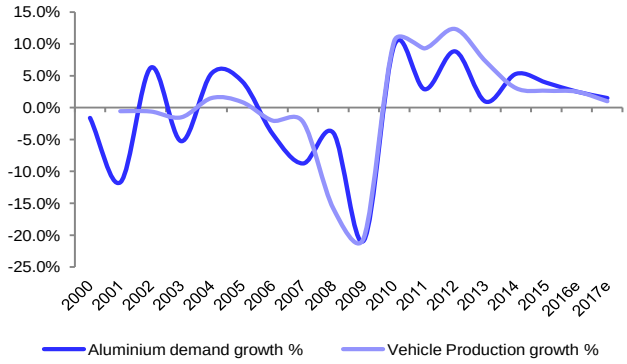
December 2014. At a country level, France has slipped into contraction amid further weakness in growth in new orders while German activity managed to stay in expansion mode albeit at a low pace of growth. The weaker economic indicators have been in line with deteriorating offtake of aluminium products. Flat rolled product orders of standard products have been on the decline. Shipments, particularly to the construction and general engineering industry, have been sequentially weaker versus Q4 2015.

Figure 100: North American demand by sector 2016E



Source: Deutsche Bank, Wood Mackenzie

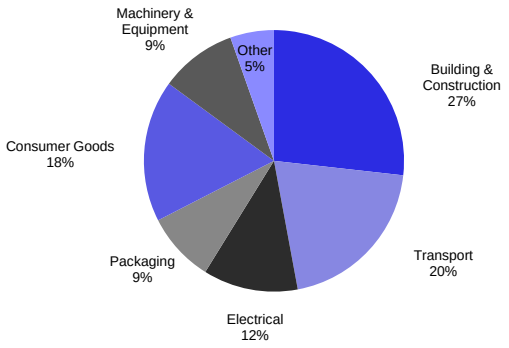
Figure 101: North American aluminium demand is closely correlated to the health of the Auto sector



Source: Deutsche Bank, Wards, Wood Mackenzie

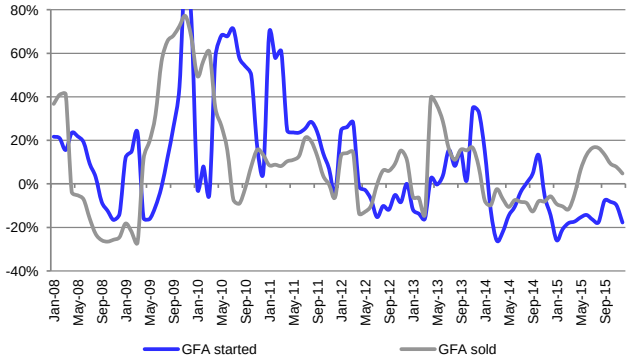
In China, Building and Construction remains the largest component of demand. The residential property sector, especially with respect to new starts remains weak, with the inventory overhang in the tier 3 and 4 cities still being a drag on demand. We expect some the weakness in the residential property sector to be offset by continued infrastructure investment. The outlook in many of the other demand sectors remains healthy in our view. The National Energy Administration (NEA) announced the second round of rural grid upgrade project in February. The total investment will be 700 bn RMB, but the exact time frame has not been released yet. The project will improve the quality of power supply in the rural areas, and promote electricity usage in the agriculture sector and the rural residential sector. China's rural grid utilises aluminium in overhead cables and hence is more aluminium intensive than the urban grid project. Some wire and cable producers have reported robust orders and have started purchasing raw material. Extruders have reported increased orders from the railway segment in 2016. Meanwhile, a few flat rolled producers have reduced shift times instead of halting production during the holidays due to robust demand. China's auto sales surged by 7% to 2.5Mn units in January compared to the same period last year. However, passenger vehicle sales slumped by 9% and commercial vehicle sales surged by 26%.

Figure 102: Chinese demand by sector in 2016E



Source: Deutsche Bank, Wood Mackenzie

Figure 103: Chinese property sales have rolled over before new starts could pick up.

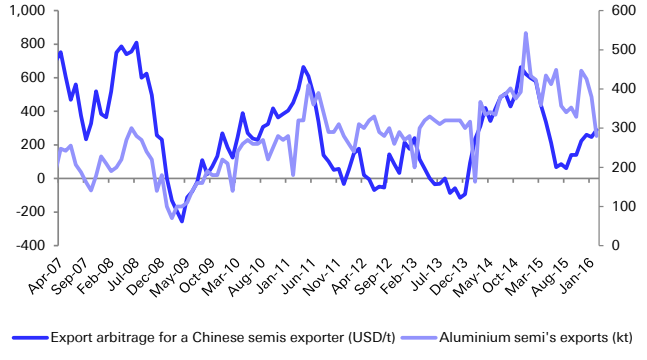


Source: Deutsche Bank, WIND

Chinese exports fell in February, but it's too early to call a trend.

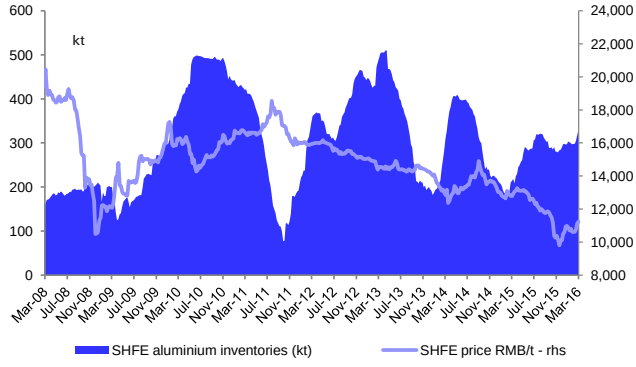
Chinese exports of semi-fabricated products fell c.34% year on year in February, pulling down the YTD level to 23%. This is surprising given the fact that the arbitrage for an exporter has been rising since the end of August 2015, to a level which is now over USD280/t. The combination of capacity curtailments in the US and rising premiums have led to the improving arbitrage. The explanation for the fall in exports could be down to a tighter domestic market. Whilst it's fair to say that domestic prices have been rising, visible domestic inventories have ticked up just recently. Given the relatively muted price reaction in China, we think the market in China remains relatively well supplied.

Figure 104: Chinese semi exports versus the export arbitrage



Source: Deutsche Bank, Bloomberg Finance LP

Figure 105: SHFE inventories versus price



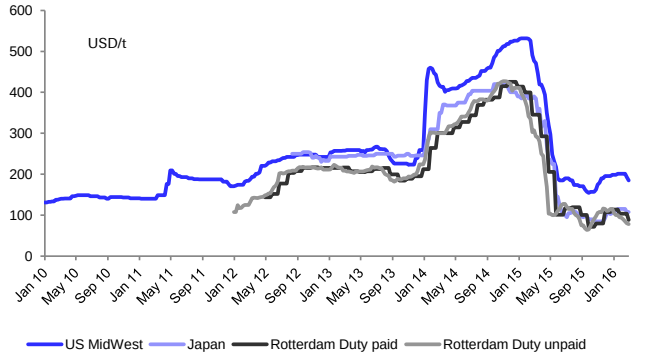
Source: Deutsche Bank, Bloomberg Finance LP

The bounce in premiums proved to be short-lived

Global premiums recovered modestly post the announcement of the Alcoa supply curtailments, with the US Mid West premium touching USD200/t very briefly. However, the backwardation in the cash to 3 month spread has increased the cost of holding metals. Although spreads have bounced back into contango once more, the failure to roll over positions could result in large volumes of metal offered to the physical market. The inability of physical demand to absorb large quantities of metal (dependant on the scale of liquidation), will exert downward pressure on aluminium premia. We think that under current market conditions of softening physical demand, the potential of

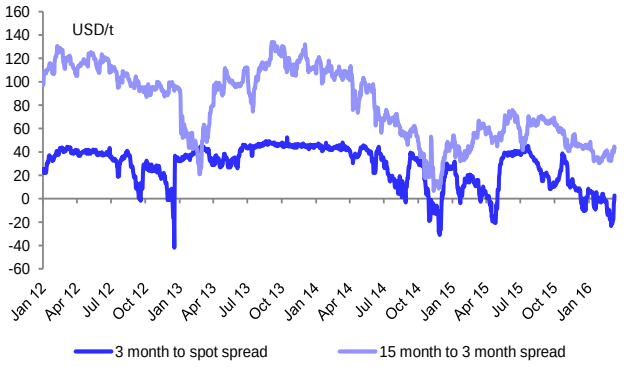
increasing Chinese imports of semi-fabricated products, falling freight costs, and weakening demand from financial participation, current premia levels will continue to ease lower once more. European duty-paid premia eased to a USD120-140/t range in February from USD150-170/t the month before. Duty-unpaid premia were also lower at USD75- 85/t from USD95-110/t during the same period. In tandem with the fall in European premia, US Midwest quotes stepped down from multi-month high of USc9.00-9.25/lb (USD198-204/t) seen in January to USc8.50-9.00/lb (USD187-198/t) in early March.

Figure 106: Key regional aluminium premiums



Source: Deutsche Bank, Bloomberg Finance LP

Figure 107: Aluminium time spreads

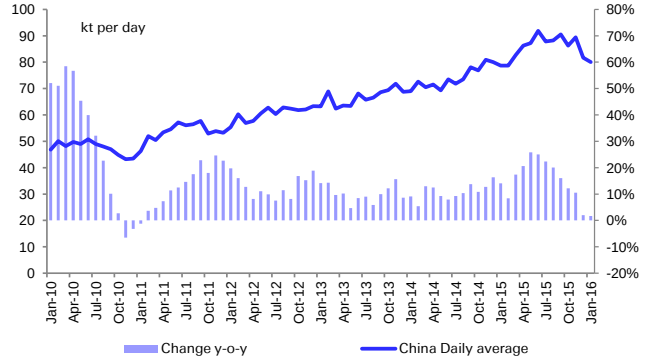


Source: Deutsche Bank, Bloomberg Finance LP

Chinese supply momentum has eased significantly. How long will it last?

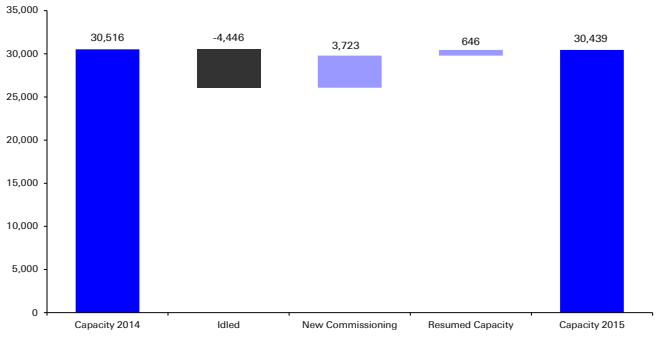
The main debate in the aluminium market is how long the Chinese supply discipline will last. Our view is that new starts will once again overwhelm any attempts at further shuts. China's CNIA reported output of 2.48Mt in January, down 4% on 2015 and down 12.9% from the peak 2015 rate of 33.5Mtpa in June. The latest figure is also lower than the December output at 2.53Mt, confirming that some cuts were actually implemented during December. We estimate that c.3.7mt of capacity has been idled since the beginning of 2015. There are however a number of reports of restarts and projects being reactivated after being postponed in 2015. The potential capacity addition is estimated at over 5Mtpa. The near-term trend for now remains positive, with estimates suggesting that cuts in China matching the new starts.

Figure 108: China daily aluminium production eases lower



Source: Deutsche Bank, CNIA

Figure 109: Chinese capacity remains unchanged



Source: Deutsche Bank, RUSAL

The Tianshan aluminium smelter, located in the Xinjiang province of China, has reported that it will add a further 200ktpa smelting capacity in the September Quarter. The smelter currently has 1.2Mtpa of production capacity and has deferred the further expansion start-up due to following the 'supply side reform' policy, despite the smelter holding no product stock. To support the capacity start-up, the smelter will commission a further two captive 350MW power generators prior to the start, with four 350MW power generators currently operating. The power cost to the smelter is reported as around CNY0.11/kWh (US1.7¢/kWh).

Shandong Chiping Xinfa is constructing 1Mtpa capacity at Xinyuan and the initial 330ktpa line is scheduled for commissioning in Q2. China Hongqiao plans to add 1Mtpa capacity, in 4 increments to achieve total capacity of 5.5Mtpa in 2016. Xinfa Xinjiang plans to add 500ktpa capacity in H2, lifting its capacity at Wujiaqu to 2.4Mtpa. The companies have been actively expanding output in recent years and have proven track records in project implementation.

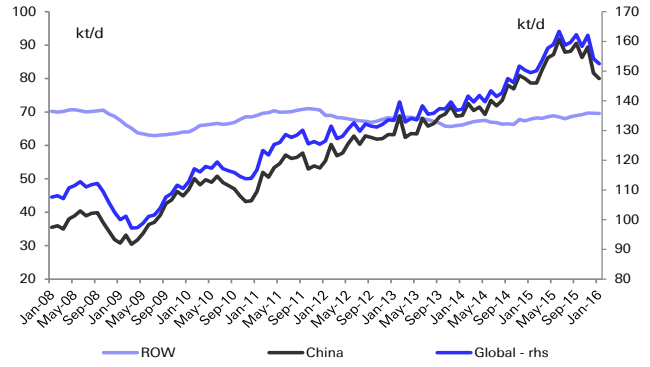
Figure 110: Planned China smelter capacity additions in 2016

Company	Province	Smelter	2015 Capacity	Q1	Q2	Q3	Q4	Planned 2016 addition
Xinfa Group	Xinjiang	Wujiaqu City	1900	150	0	125	250	525
Qiya Group	Xinjiang	Changji	860		150	150	150	450
East Hope	Xinjiang	Changji	1230	165			165	330
Tianlong Mining	Xinjiang	Fukang	150			100		100
Tianshan	Xinjiang	Shihezi	1100		200			200
Joinworld Group	Xinjiang	Urumchi	180				90	90
Qingdao Antaixin Group	Xinjiang	Jiarun	450		150		150	300
Jinghongyuan	Chongqing	Jiarun	100	50	50			100
Bosai and Dongsheng	Chongqing	Dalang	0	50	50			100
Suyuan	Guangxi	Baise	0		50	50		100
Jinjiang group	Inner Mongolia	Jinlian	600	200			200	400
Xinheng Group	Qinghai	Xinheng Hydro	240			120		120
Qinghai Investment Group	Qinghai	West Hydropo	450					0
Qinghai Materials	Qinghai	Datong	100			50	50	100
Meixin	Shaanxi	Tongchuan	0					0
Weiqiao	Shandong	Hejin	4500	250	250	250	250	1000
Chalco Huaze Yunnan	Shanxi	Hejin	350		100			100
Metallurgical	Yunnan	Zhaotong	0					0
Zhongwang	Liaoning	Yingkou	250		100	100		200
Huomeihongjun	Inner Mongolia	Zaha Nur	380			50		50
Xinfa Group	Shandong	Chiping	0		330	330	340	1000
Qinyi	Ningxia	Zhongning	50				50	50
Baotou Aluminium	Inner Mongolia	Baotou Alumini	550					0
Baise Mining	Guangxi	Xinshan	0		100			100
Totals			**13440**	**865**	**1530**	**1325**	**1695**	**5415**

Source: Deutsche Bank, Wood Mackenzie

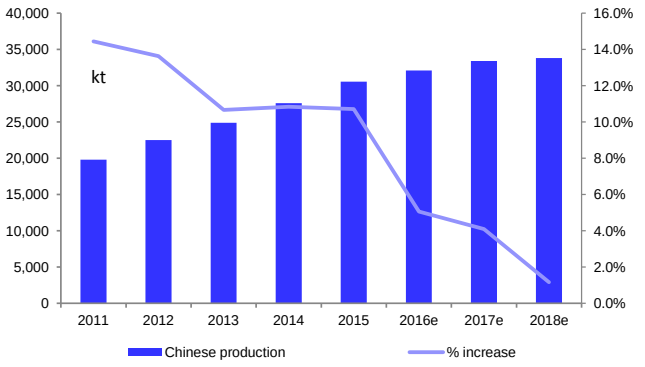
We assume that only 2Mtpa of the potential capacity is added in 2016E, which amounts to c.5% growth in output. The most likely scenario is that new supply will exceed this number and entail further curtailments to offset the weight of new supply. However, under the sheer weight of new supply, we see very little upside risk to pricing.

Figure 111: Global aluminium output



Source: Deutsche Bank, IAI

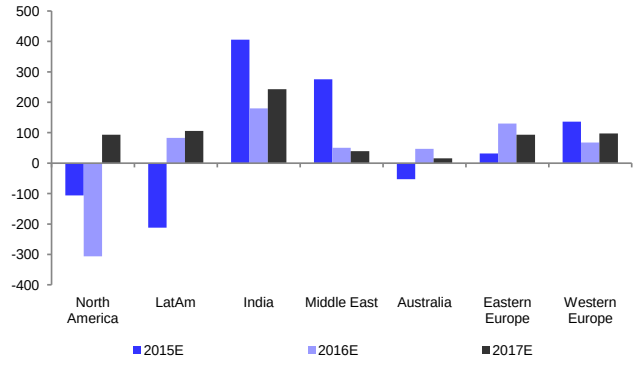
Figure 112:Chinese production forecasts



Source: Deutsche Bank, Wood Mackenzie

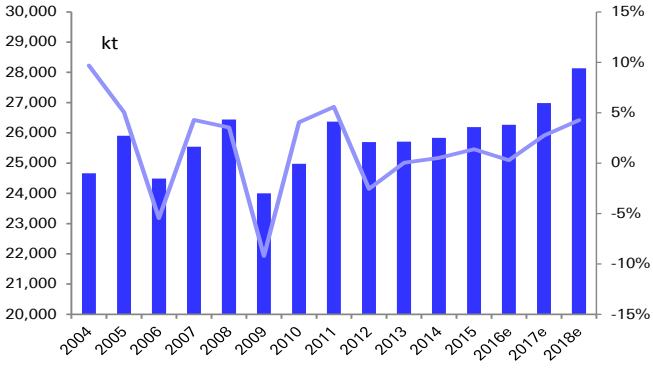
The latest IAI data indicates that global aluminium output is down 1% month on month but up a modest 2% year on year. The ROW production came in at 2,156kt (69.55kt/day), a fall of 0.1% month on month but up 2.4% year on year. Increased output from India and Asia ex China was up 17% year on year, Western Europe (+2%) and the GCC (+0%) offset declines in Africa (-1%), North America (-4%) and South America (-6%). We forecast flat production from the rest of the world with increases from India, and the Middle East, LatAm and Russia offsetting closures in the US. We forecast a rebound in growth of 2.7% in the rest of the world for 2017E, with continued growth from India, and the ramp up of the Kitimat smelter pushing North America into positive territory.

Figure 113: Regional output growth in the ROW



Source: Deutsche Bank, Wood Mackenzie

Figure 114:Aluminium production in the world ex China



Source: Deutsche Bank, Wood Mackenzie

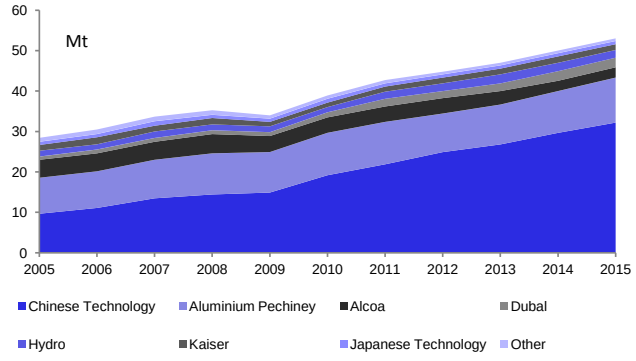
Energy deflation pauses, but technological advances will keep costs on a downward trend

Although global sentiment has turned against Chinese semi's exports, with some of the smaller US aluminum producers arguing for tariff protection and India increasing its import duty on aluminium to 7.5% from 5%. , we think that due to Chinese technological progress over the past decade, China should and will remain a natural exporter of aluminium. It is only when China exports its technology to other more naturally endowed regions (bauxite and energy) that this trend may reverse.

The main technological focus for aluminium is to improve both current throughput and specific energy consumption. The higher the amperage in an individual cell, the smaller the footprint and hence the lower the capex per

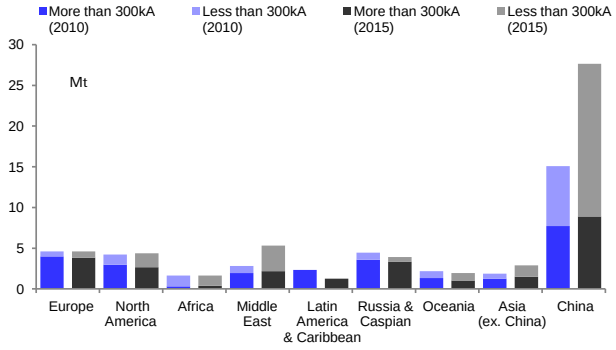
tonne will be. An improvement in specific energy consumption, also known as current efficiency simply means less energy per tonne of aluminium. China has accumulated more experience using modern smelting technology, (+300kA or above), than all other technologies combined. Since 1990, production at 300kA and above from Chinese technology amounted to 119Mt, whereas the combination of production from all other technologies in the same amperage band totalled 80Mt.

Figure 115: Global aluminium technology by type 2005 - 2015



Source: Wood Mackenzie

Figure 116: Regional aluminium production above and below 300kA

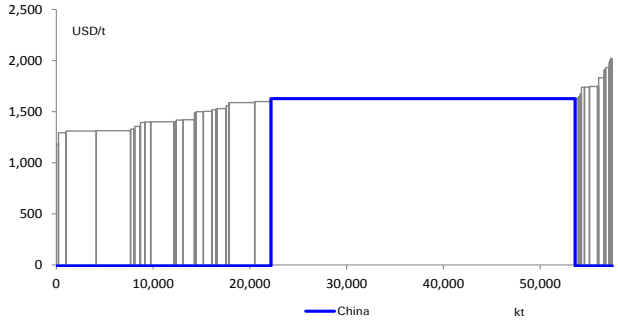


Source: Wood Mackenzie

Such an abundance of high amperage technology in China can be attributed to a number of factors. The combination of Chinese technology being relatively young and the growth in capacity being so rapid, has been ideal for the development of the domestic technology. Another key factor has been the introduction of government regulations to improve efficiencies across a range of industries in China. For aluminium smelters, the result has meant that almost all low amperage lines, typically below 200kA, have either been closed or upgraded. In 2005, around 18% of production was from smelters operating at an average amperage of below 200kA compared to less than 2% in 2015. With high amperages already improving productivity at Chinese smelters, we believe the next trend will be substantial reductions in energy consumption. Regionally, the shift in technology has largely been determined by regional power tariffs. Cheap power in the North West region, as a result of captive coal and government incentives, has meant that operating at high amperages is more advantageous. The average operating amperage for smelters in Xinjiang is 440kA.

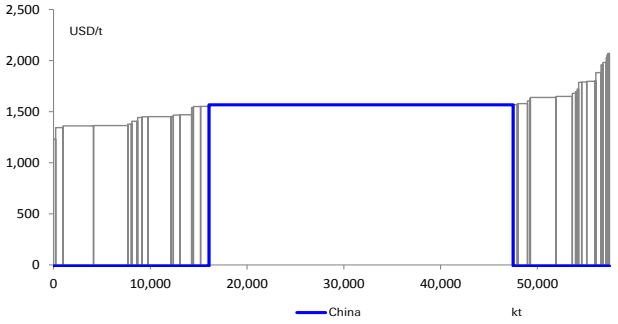
There are now six technology suppliers competing for business in China. The latest technology from Shenyang Aluminium and Magnesium Engineering Research Institute (SAMI), the SY600 cell, has a measured amperage of 600kA and claims an extremely low energy consumption of 12.1MWh/t. China shows no sign of slowing down its uptake of new smelter technology. Wood Mackenzie estimate that lower power consumption, all else equal, will drive down China's C1 cash cost and a year-on-year SEC reduction of 2% would decrease the 2020 C1 cash cost by US$60/t. China's competitive position on the global cost curve would improve as follows:

Figure 117: Average Chinese C1 cash cost position on the aluminium cost curve



Source: Deutsche Bank, Wood Mackenzie

Figure 118: Chinese C1 cash cost assuming technology advances, all other inputs remain constant



Source: Deutsche Bank, Wood Mackenzie

Figure 119: Deutsche Bank Aluminium supply –demand balance

		2010	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
Primary Aluminium												
Chinese Production	Mt	17.3	19.8	22.5	24.9	27.6	30.6	32.1	33.4	33.8	34.7	35.1
growth	%	*28%*	*14%*	*14%*	*11%*	*11%*	*11%*	*5%*	*4%*	*1%*	*3%*	*1%*
Russia Production	Mt	3.9	4.0	4.0	3.7	3.5	3.5	3.6	3.7	4.3	4.7	4.9
growth	%	*4%*	*1%*	*1%*	*-7%*	*-7%*	*1%*	*3%*	*1%*	*17%*	*8%*	*5%*
Middle East Production	Mt	3.1	3.9	4.0	4.3	5.2	5.5	5.5	5.6	5.7	5.7	5.7
growth	%	*25%*	*26%*	*5%*	*6%*	*21%*	*5%*	*1%*	*1%*	*2%*	*1%*	*0%*
Europe & N. American Production	Mt	8.5	9.0	8.5	8.5	8.2	8.2	8.0	8.2	8.3	8.6	8.5
growth	%	*0%*	*6%*	*-6%*	*1%*	*-4%*	*0%*	*-3%*	*2%*	*1%*	*4%*	*-1%*
Global Production	**Mt**	**42.3**	**46.2**	**48.2**	**50.6**	**53.4**	**56.7**	**58.4**	**60.4**	**61.9**	**64.5**	**66.0**
growth	%	*12.7%*	*9.2%*	*4.4%*	*5.0%*	*5.6%*	*6.2%*	*2.9%*	*3.5%*	*2.6%*	*4.2%*	*2.3%*
check		*42.3*	*46.2*	*48.2*	*50.6*	*53.4*	*56.4*	*57.8*	*59.5*	*63.1*	*65.2*	*67.9*
Global Capacity	Mt	50.3	53.1	55.7	59.8	64.9	68.2	71.8	73.4	75.3	76.6	77.4
utilisation rate	%	*84%*	*87%*	*87%*	*85%*	*82%*	*83%*	*81%*	*82%*	*82%*	*84%*	*85%*
Primary Aluminium Consumption												
China Consumption	Mt	16.7	19.5	21.5	23.9	26.3	28.0	29.5	30.8	32.3	33.8	35.1
growth	%	*18.1%*	*16.4%*	*10.4%*	*11.3%*	*10.0%*	*6.2%*	*5.5%*	*4.5%*	*4.8%*	*4.5%*	*4.0%*
China net imports (exports)	Mt	-0.4	-0.5	0.0	-0.3	-0.8	-2.6	-2.6	-2.6	-1.5	-0.9	0.1
Developing economies (ex China)	Mt	10.4	11.2	11.3	11.5	12.2	12.6	12.9	13.4	13.9	14.5	15.1
growth	%	*11%*	*8%*	*1%*	*2%*	*6%*	*3%*	*2%*	*2%*	*4%*	*4%*	*4%*
North America	Mt	5.3	5.4	5.9	6.0	6.3	6.5	6.7	6.8	6.9	7.0	7.2
growth	%	9.8%	2.9%	8.8%	0.9%	5.3%	3.9%	2.5%	1.5%	2.0%	1.1%	2.0%
EU 15	Mt	7.9	8.3	8.4	8.5	8.8	9.0	9.2	9.4	9.6	9.8	10.0
growth	%	*11%*	*5%*	*1%*	*1%*	*3%*	*2%*	*2%*	*2%*	*2%*	*2%*	*2%*
OECD Consumption	Mt	13.7	14.0	14.6	14.5	15.1	15.5	15.7	15.8	16.0	16.2	16.4
growth	Mt	*12%*	*2%*	*4%*	*0%*	*4%*	*2%*	*1%*	*1%*	*1%*	*1%*	*1%*
Global Consumption	**Mt**	**40.8**	**44.7**	**47.4**	**50.0**	**53.7**	**56.0**	**58.1**	**60.0**	**62.3**	**64.4**	**66.5**
check		*40.8*	*44.7*	*47.4*	*50.0*	*53.7*	*56.0*	*58.3*	*60.5*	*62.5*	*64.6*	*66.9*
growth	%	*14.1%*	*9.4%*	*6.2%*	*5.5%*	*7.3%*	*4.3%*	*3.7%*	*3.4%*	*3.7%*	*3.4%*	*3.4%*
Production adjustments	*Mt*				*0*	*0*	*0*	*-460*	*-598*	*-1,027*	*-570*	*168*
Market balance	**Mt**	**1.46**	**1.51**	**0.77**	**0.58**	**-0.26**	**0.76**	**0.31**	**0.39**	**-0.31**	**0.14**	**-0.52**
check		*1.46*	*1.51*	*0.77*	*0.58*	*-0.26*	*0.40*	*-0.44*	*-0.97*	*0.63*	*0.53*	*0.95*
Reported metal stocks	Mt	10.68	12.19	12.97	13.55	13.29	14.05	14.35	14.74	14.43	14.57	14.05
Stocks to consumption	**weeks**	**13.61**	**14.20**	**14.22**	**14.08**	**12.87**	**13.05**	**12.85**	**12.77**	**12.05**	**11.77**	**10.98**
LME stocks (end-of-year)	Mt	4.01	4.52	5.29	5.87	5.61	6.37	6.68	7.07	6.76	6.90	6.38
Avg. LME cash price	**$/t**	**2,191**	**2,423**	**2,052**	**1,889**	**1,893**	**1,664**	**1,538**	**1,595**	**1,700**	**1,806**	**1,911**
Avg. LME cash price	**c/lb.**	**99**	**110**	**93**	**86**	**86**	**75**	**70**	**72**	**77**	**82**	**87**

Source: Wood Mackenzie, Deutsche Bank

Zinc: Back in favour and backed by fundamentals

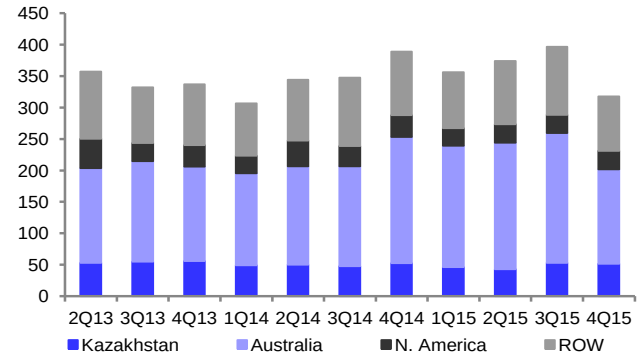
- Now that we have had confirmation of the Century and Lisheen mine closures, as well as confirmation that Glencore's production cuts are coming into force, the sentiment towards zinc has improved significantly since the price collapse in May last year. Positioning on the LME now suggests that zinc is vying with Tin as the most preferred base metal. Zinc prices are up 10% year to date versus tin at 14%.
- Spot TC terms have tightened up, and ongoing contract negotiations all point to a tighter concentrate market. However the tightness in the refined metal market may take a quarter or two to manifest itself, with signs of tightness in the metal market less convincing. Regional premiums have eased higher, although not convincingly so. Likewise visible inventories have been relatively stable over Q1, with the sudden inflow on the LME in mid 2015 now fully reversed. After a brief period of backwardation the spot to 3-month spread has slipped back into contango. Until such time as the metals signs become more convincing, the metal may still be held hostage to the fortunes of investor sentiment.
- Given the mined supply constraints, we estimate that the market will be in a fair deficit over the next two to three years (an average of c.300ktpa), and as such, zinc remains our most preferred base metal. There are however two aspects of the zinc market which could spoil the bullish story. The first is weaker than expected demand, especially out of China. Chinese demand growth slowed significantly in 2015, (3.7% versus 7% in 2014). We forecast a small pick-up in demand growth this year driven by strong momentum in infrastructure construction, white goods and Auto's, offsetting weakness in the residential property sector, and manufacturing sectors. We continue to forecast positive zinc demand in China, despite negative steel demand. History does however suggest that the divergence between steel and zinc demand cannot be too extreme.
- The second key risk to zinc's bull case is Chinese mined supply. Official statistics would suggest that Chinese mined supply has contracted by 9% in 2015, due to a combination of depleting reserves, environmental scrutiny and price induced shuts. The recent recovery in pricing may spur some restarts, but we think this is unlikely. We forecast a conservative increase in production of y% in 2016 and 2017E.

Tightening mine supply underpins the bull case on zinc

A combination of price-induced production cutbacks, ore reserve depletion and capital spending cuts underpin the bull case in zinc. Century and Lisheen were well known, but now that we have had confirmation of Glencore's supply cuts as outlined by their Q4 production results, the market is reluctantly starting to accept the reality. The reluctance is due to too many false dawns for zinc, and even now, it is only due to Glencore's strategic cuts that we estimate the market will be in a deficit next year. During FY15, Glencore's expansion projects in Australia drove the total zinc production up by 4% YoY. However, the production cut announced in Oct-15 at the Australian zinc assets resulted into decrease in production by -20% QoQ. The company has guided a decrease of -24% YoY in annual zinc production for 2016.

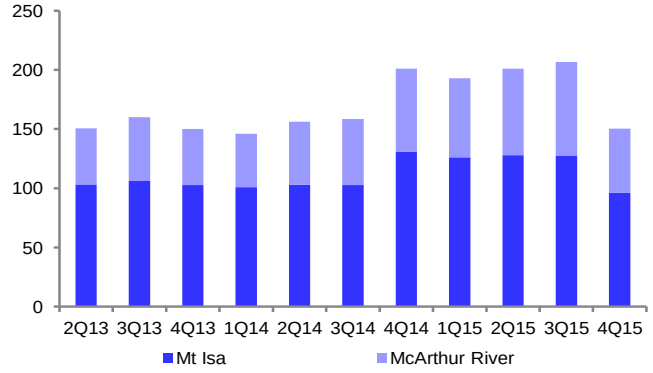
Glencore has guided to zinc output of 1,095kt (+/_ 25kt) versus 1,445kt in 2015 and 1,387kt in 2016.

Figure 120: Quarterly Zinc production by geography (kt)



Source: Company data, Deutsche Bank

Figure 121: Australian zinc (kt)



Source: Company data, Deutsche Bank

No. 2 global zinc miner Vedanta Resources also has some challenges. Although HZL reported an impressive ~11% increase in refined metal volumes (Zn + Pb) during the quarter supported by enhanced smelter efficiency and inventory conversion, metal in concentrate (MIC) production was down ~6% YoY as it was adversely impacted by change in mining mix, and the consequent decline in average grades. With HZL maintaining FY16 guidance of marginal growth in MIC production despite ~13% growth already recorded over 9M'FY16, our analysts believe that 4Q'FY16 may be subdued. Ore production from the Rampura Agucha mine in India is reported to have been reduced temporarily due to operational difficulties associated with the ramp-up of the underground mine which has fed ore to the Agucha mill since late-2012 in parallel with the existing open pit. Shaft sinking and development of the required infrastructure has been behind schedule.

Cash constraints are weighing on the company too, which puts their medium term output at risk. Vedanta has announced that the planned capex spend on Gamsberg will be reduced to USD40M in 2016. This compares to a budgeted USD80M in the financial year to end-March 2016 (which was cut from a previously planned USD250M). Of all of the most recent developments perhaps the most significant is the deferral of pre-stripping at the Skorpion zinc mine in Namibia, may now close by the middle of 2017 instead of 2019, raising the prospect that the integrated smelter may stop production until alternative feedstock is available from the Gamsberg project. If this happens it would remove 140ktpa of refined metal from the market without releasing an equivalent tonnage into the concentrate market.

We outline the total forecast supply cuts expected in the market for 2016:

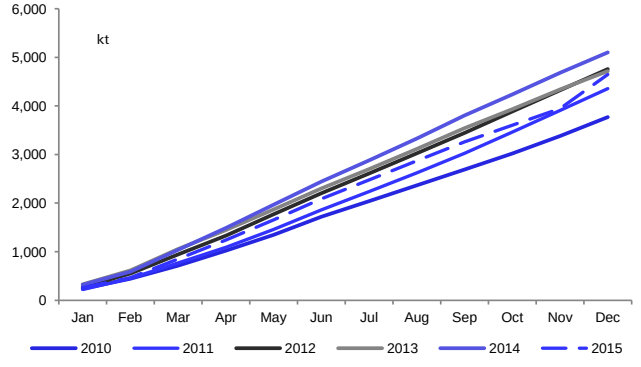
Figure 122: Zinc mine production cuts

Mine	Country		2015	2016
Lisheen	Ireland	Reserve depletion		105
Century	Australia	Reserve depletion		395
Total planned				**500**
Wolverine, Campo	North America	Early 2015	85	95
Middle Tennessee	USA	Late 2015	5	35
Al Masane	Saudi Arabia	Early 2016		10
Endeavor	Australia	H2 2016		20
Total price/technical			**90**	**160**
Mount Isa	Australia	Glencore	50	245
McArthur River	Australia	Glencore	25	135
Iscaycruz	Peru	Glencore	15	80
Kazzinc	Kazakhstan	Glencore	10	40
Total Glencore strategic			**100**	**500**
Grand total			**190**	**1160**

Source: Deutsche Bank, Company reports, Wood Mackenzie

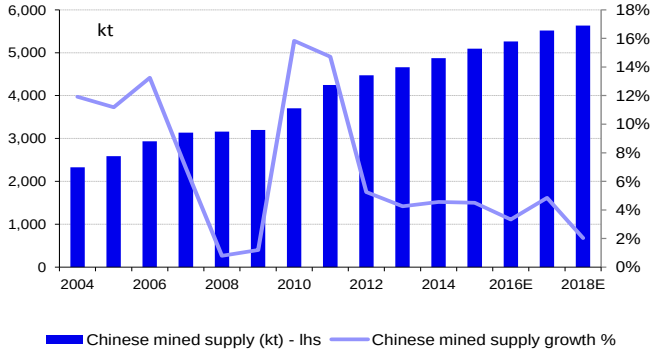
The National Bureau of Statistics (NBS) reported China mine production of 400kt Zn in December, up 5% on November, but representing a 15% year-on-year reduction, bringing output for 2015 to 4.75Mt Zn (823kt Zn less than in 2014). Mine output was reported to be lower year-on-year in Fujian, Guanxi, Hunan and Jiangxi, Shaanxi and Sichuan provinces, largely due to both the impact of increased environmental controls and the low zinc price. Meanwhile, Inner Mongolian production increased 8.0% year-on-year to 1.7Mt in 2015. There are a fair number of artisanal miners in China which are not captured in the official stats. Whilst these miners will be under pressure, we estimate that the total China output is higher than the official stats by c. 350kt. We continue to forecast modest increases in mined supply. However, we acknowledge that weak pricing may see Chinese mined supply disappoint on the down side. SMM expect Zinc supply to be flat in 2016 (c.5.5mt, including 5.1mt mine production and 0.4mt secondary zinc).

Figure 123: Chinese mined supply output according to the NBS



Source: Deutsche Bank, NBS

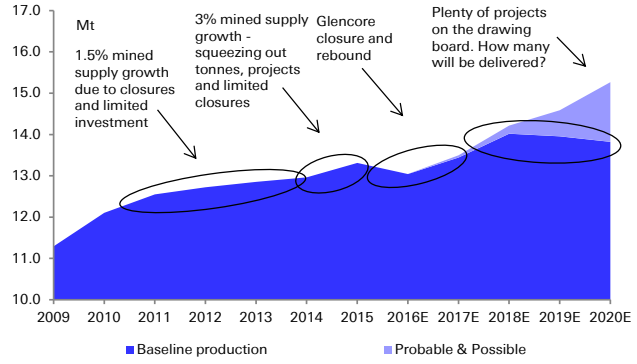
Figure 124: DB China mined supply forecasts



Source: Deutsche Bank, Wood Mackenzie

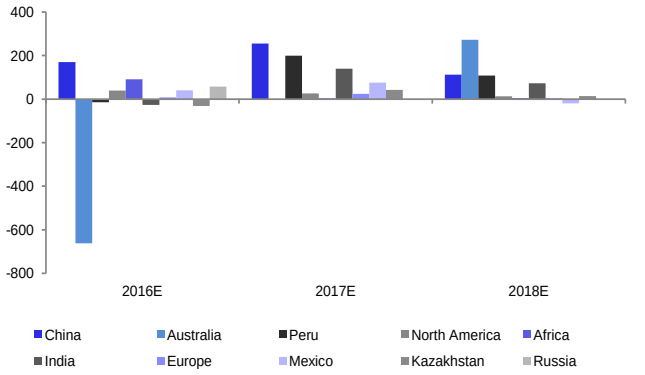
We forecast the ROW mine production to contract by about 5% in 2016 following the planned closure of Century and Lisheen and the cutbacks at other operations including Glencore's. Depending on how quickly Glencore ramp up their operations, and we acknowledge that these are price dependant, we forecast a 3% rebound in 2017E, and a more significant 5% jump in 2018E as Dugald River starts to ramp up.

Figure 125: Global zinc mined supply growth



Source: Deutsche Bank, Wood Mackenzie

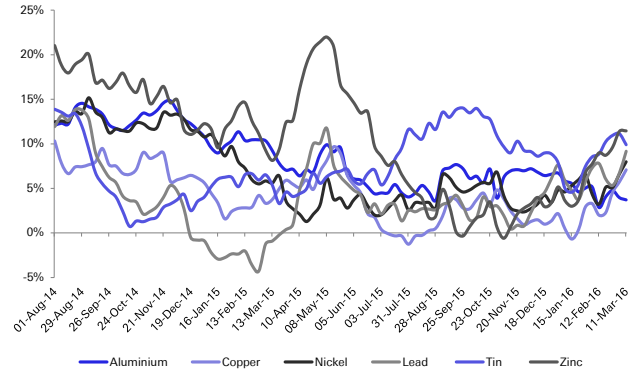
Figure 126: Global mined supply growth by region



Source: Deutsche Bank, Wood Mackenzie

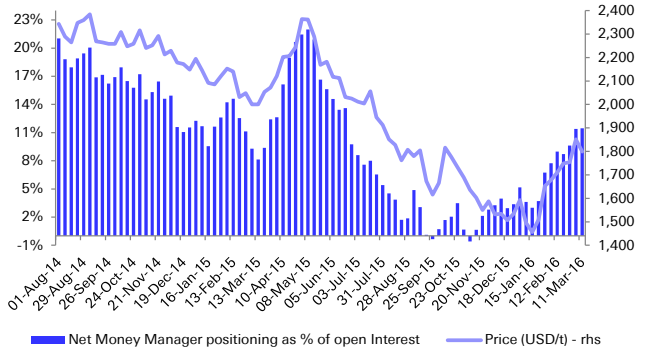
The market has now started to price in the tightness in the concentrate supply, and the net money managers positioning is far more bullish. Zinc is the most preferred base metal among money managers with a net long as a percentage of open interest at 11.4%. Zinc net positions as a percentage of open interest have increased the most from 3% to 11.4% year to date, reiterating the shift in sentiment on the metal. Zinc prices have also increased the most amongst the base metals, up 13% year to date.

Figure 127: Net Money manager positioning as a % of open interest



Source: Deutsche Bank, LME, Bloomberg Finance LP

Figure 128: Zinc Net Money manager positioning as a % of open interest



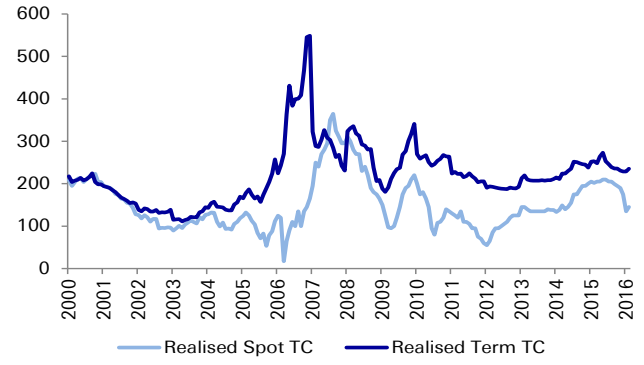
Source: Deutsche Bank, LME, Bloomberg Finance LP

Concentrate tightness is now evident, but we need more convincing on the metal

Spot TC's (treatment charges) are down nearly USD60/t since August last year, a reflection of the increasing tightness in the market. There has been a wave of "smelter maintenance" announcements over the past two months which has stabilized the TC's. The slight increase in the contract TC's, is more to do with the zinc price than a change in terms. Indeed, it was zinc price expectations both in terms of a basis price and price participation scales that seem to have been the main sticking point during the negotiations on annual treatment charges at this month's International Zinc Association conference in Scottsdale Arizona. Although the negotiations appear to have converged around an acceptance that this year's annual treatment charge will be some USD40/t – USD50/t lower than last year's agreements of $245/t basis $2000/t, no settlement has yet been reached. We would expect the settlement to be in the range of USD185 – 195/t with a base price between USD1,700 – 1,800/t. We

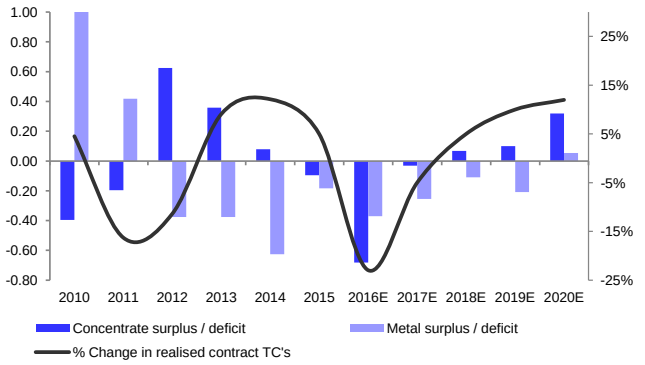
forecast a concentrate deficit of +600kt for 2016E, which is in part why we expect such sharp fall in TC's. In 2017E, we forecast the metal deficit to outweigh the concentrate deficit, but for 2018/19, we expect the concentrate market to be in a slightly surplus as stocks rebuild. TC terms should increase in line with the slight loosening of the concentrate market.

Figure 129: Zinc TC's have stabilized after falling sharply



Source: Deutsche Bank, Wood Mackenzie

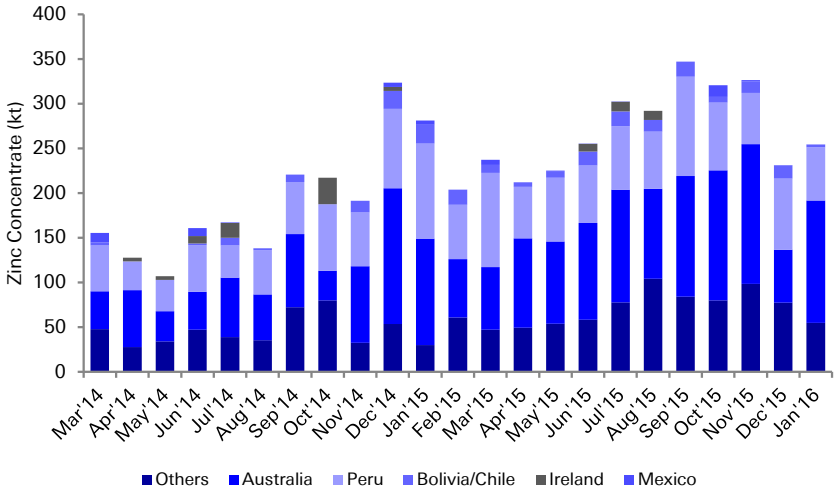
Figure 130: Concentrate versus metal deficits



Source: Deutsche Bank, Wood Mackenzie

Despite the modest tightness in the concentrate market, Chinese imports have been relatively robust over 2015, and from a variety of countries. However, we would expect some impending challenges in 2016, unless domestic production picks up significantly in response to prices. Given the Century closure and the Glencore shuts, the main squeeze is likely to come from Australia.

Figure 131: Chinese zinc concentrate imports by region – expecting a squeeze from Australia

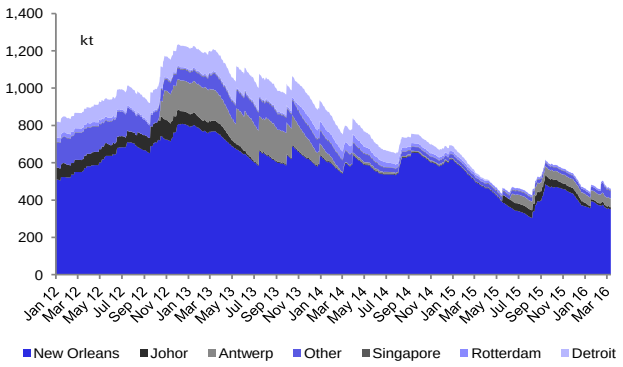


Source: Deutsche Bank, NBS

There are signs of the concentrate market tightness extending to the refined metal market, but we think these are however somewhat mixed. A few more indicators need to turn positive before the market will be convinced. LME zinc inventories have declined by close to 50% since the middle of September 2015. Most of the withdrawals have been from New Orleans warehouses. The question as always remains whether this is simply a re-allocation of stocks to

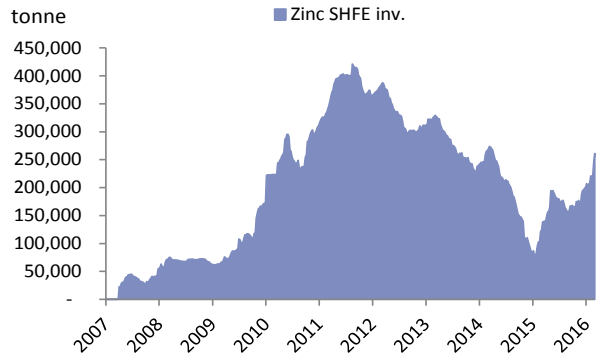
non LME registered warehouses. Given the period which the forward curve spent in contango, we expect that this partly explains some of the move.

Figure 132: LME zinc inventories by location



Source: Deutsche Bank, Bloomberg Finance LP

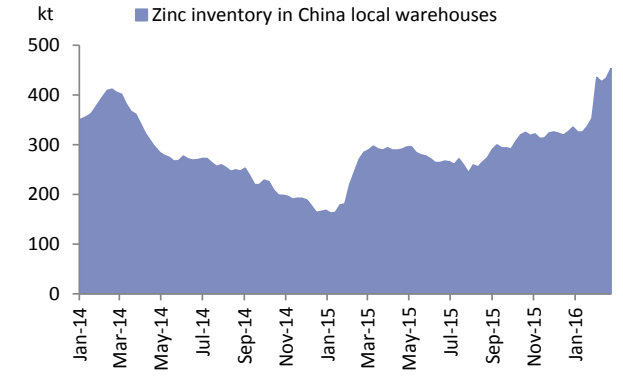
Figure 133: Zinc inventories on the SHFE



Source: Deutsche Bank, Bloomberg Finance LP

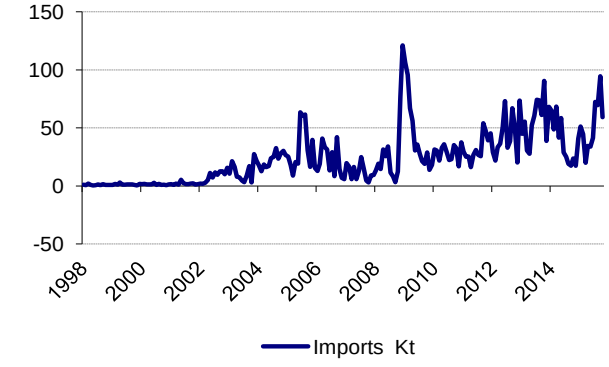
Just as LME inventories have fallen, inventories in China have risen, with SHFE inventories now above 250kt, and zinc inventories in local warehouses approaching 450kt. These moves are however consistent with restocking ahead an expected pick-up in demand. Given the strong recovery in Chinese metal imports over the course of 2015, the rise in Chinese inventories are unsurprising. January's fall in imports suggest that the restocking momentum is over.

Figure 134: Total zinc inventory in Chinese warehouses



Source: SMM, Deutsche Bank

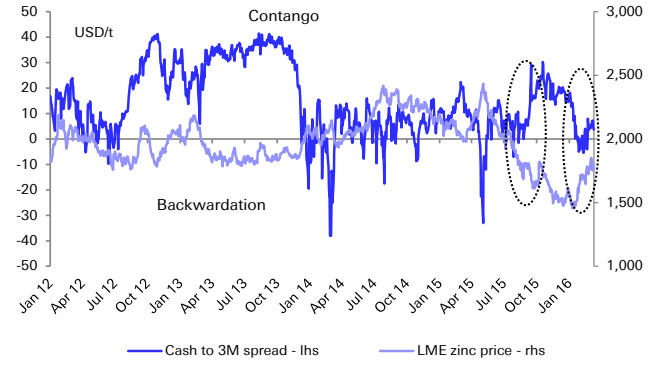
Figure 135: Chinese refined zinc imports



Source: NBS, Deutsche Bank

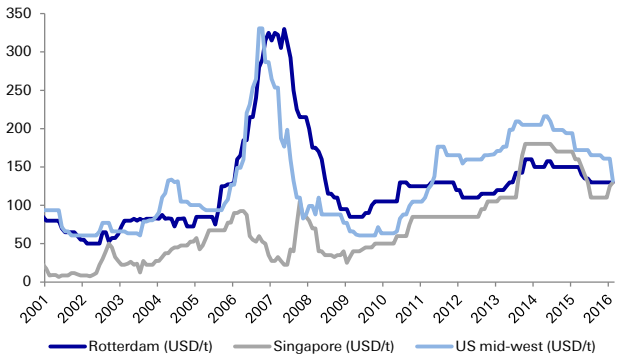
The cash to 3 month spread moved sharply from a contango of USD20/t into backwardation of USD10/t at the beginning of the year. This signals a tightening of the physical market. However, the market has moved back into a USD10/t contango. Signals from the forward curve have not been fully reflected in the premium market with US Mid West premiums continue to fall, whilst Singapore premiums have recovered modestly from the lows. This suggests that the demand pull has been from China.

Figure 136: Cash to 3-month time spreads



Source: Bloomberg Finance LP, Deutsche Bank

Figure 137: Global zinc premiums – mixed signals



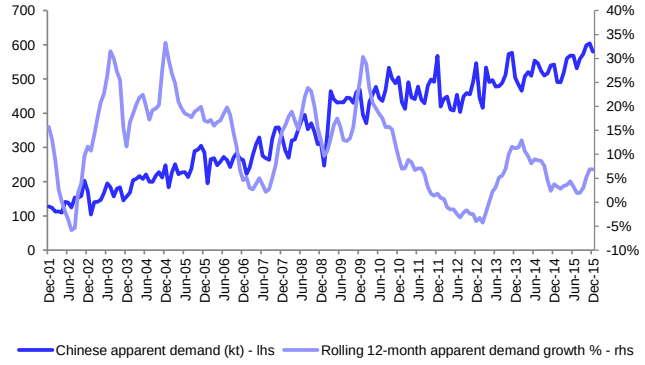
Source: Wood Mackenzie, Deutsche Bank

Global demand to ease lower in 2016

We estimate that Chinese demand growth slowed sharply to 3.7% in 2015 mainly due to the weakness in the property sector. But given the overall weakness in steel consumption, this still looks like a respectable growth rate. The apparent demand growth (refined production plus net imports) finished the year at 6.8% after recovering from 1.8% in August. The relatively wide discrepancy between estimated "real" demand and apparent demand points to restocking in China.

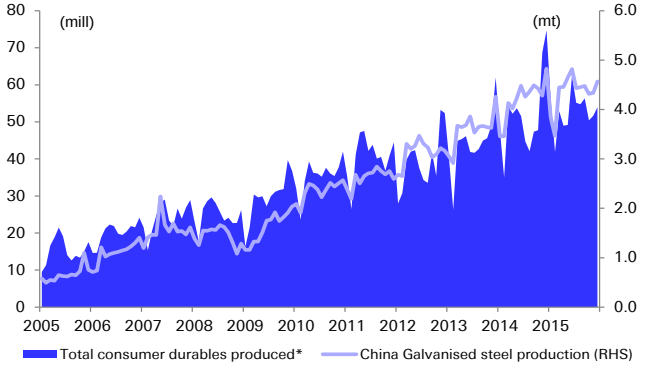
Chinese galvanized sheet production was up a modest 3.6% in 2015, very much in line with the estimated zinc demand growth. This number is still high given the weaker than anticipated full year result in both Auto output and consumer durables. As an indicator, the sum of Washing machine, Air conditioner and refrigerator output is down 1.5% year on year. In contrast Auto production was up at 3%, lower than initial estimates but still in positive territory. Encouragingly the momentum on truck sales has turned slightly less negative, because not only are trucks more zinc intensive, but it is also an indicator that the investment climate is improving.

Figure 138: Chinese apparent demand – rolling 12 month YoY



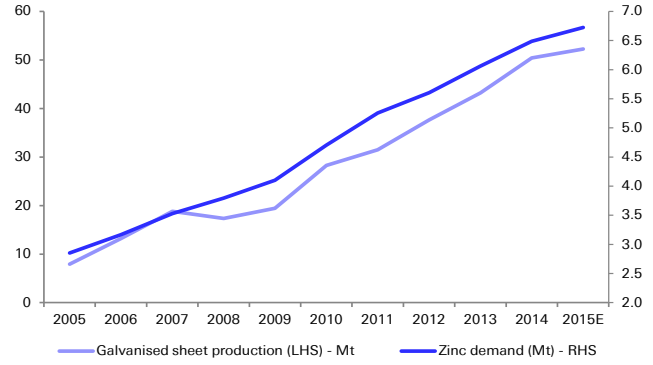
Source: Deutsche Bank, NBS

Figure 139: China consumer durable* sales vs galvanized steel production



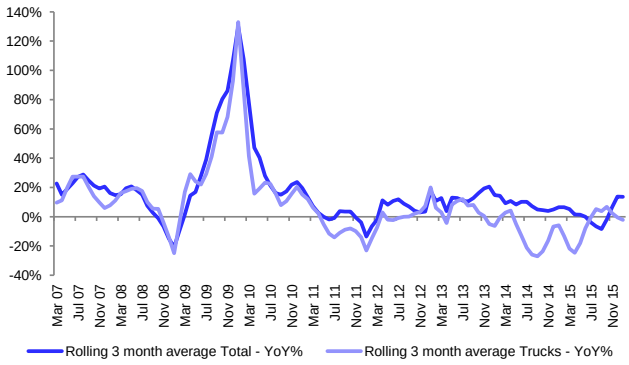
Source: Bloomberg Finance LP, NBS, Deutsche Bank, *Washing machines, oven, Air conditioners and Refrigerators

Figure 140: Domestic galvanized sheet production versus Chinese zinc demand



Source: CEIC, Deutsche Bank, Bloomberg Finance LP

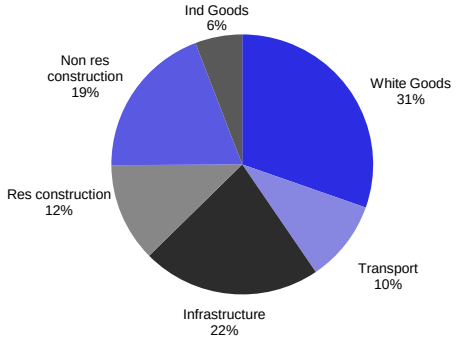
Figure 141: Chinese vehicle sales momentum



*Source: Bloomberg Finance LP, NBS, Deutsche Bank, *Apparent zinc consumption = refined production plus net imports*

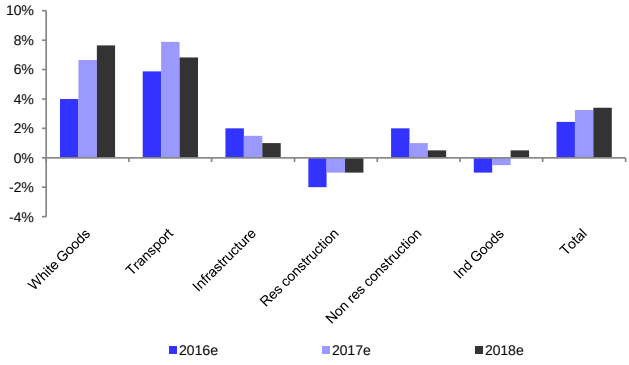
We have tweaked down our zinc demand growth expectations to 1.8% in 2016E, rising to 2.4% in 2017E. We expect weakness in the Chinese property sector to remain, offset to a certain extent by Infrastructure spending, consumer durables and Auto's. In our lower Chinese demand number for 2016E (+2.4%), we also take account of inventories in the manufacturing pipeline. This is still relatively bullish compared to channel checks with zinc refiners/ mid and downstream players conducted by SMM who are looking for flat demand year on year. We continue to forecast Chinese zinc demand forecasts to be closer to global demand growth as the economy matures.

Figure 142: Chinese zinc demand by sector - 2015



Source: Deutsche Bank

Figure 143: Chinese demand growth by sector



Source: Deutsche Bank

Figure 144: Global zinc supply & demand model

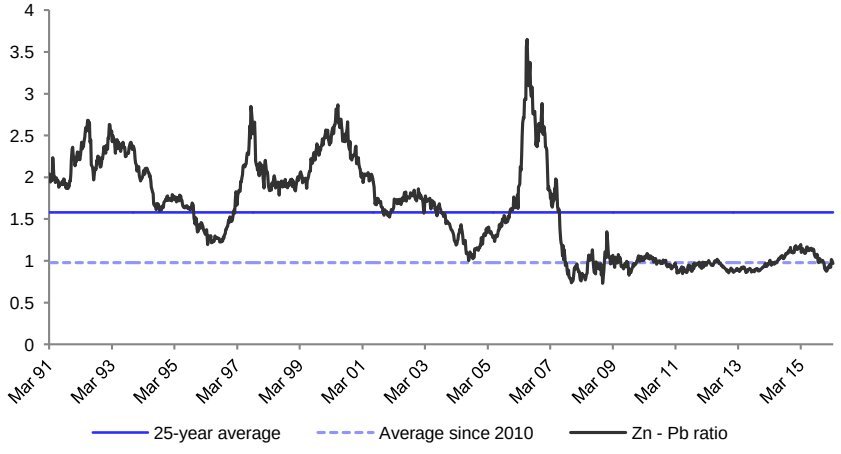
		2010	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
China mine production	Mt	3.7	4.2	4.5	4.7	4.9	5.1	5.3	5.5	5.6	5.7	5.7
China mine production growth	%	*16%*	*15%*	*5.2%*	*4.3%*	*4.6%*	*4.5%*	*3.3%*	*4.8%*	*2.0%*	*0.6%*	*0.0%*
Australia mine production	Mt	1.5	1.5	1.5	1.5	1.5	1.6	0.9	0.9	1.2	1.3	1.2
Australia mine production growth	%	*13%*	*0%*	*0%*	*0%*	*2%*	*5%*	*-41%*	*0%*	*29%*	*5%*	*-7%*
Peru mine production	Mt	1.4	1.2	1.2	1.2	1.2	1.3	1.3	1.5	1.6	1.5	1.5
Peru mine production growth	%	*-2%*	*-15%*	*0%*	*5%*	*-3%*	*6%*	*-1%*	*16%*	*7%*	*-6%*	*2%*
North America mine production	Mt	1.9	2.0	2.0	1.8	1.8	1.7	1.8	1.9	1.9	1.9	1.8
North America mine production growth	%	*1%*	*5%*	*0%*	*-9%*	*0%*	*-3%*	*5%*	*6%*	*0%*	*0%*	*-4%*
India mine production grow th	Mt	0.7	0.7	0.7	0.8	0.7	0.8	0.7	0.9	1.0	1.0	0.9
India mine production growth	%	*4.6%*	*3.5%*	*-1.7%*	*13.0%*	*-13.5%*	*6.9%*	*-3.5%*	*19.0%*	*8.3%*	*2.1%*	*-4.4%*
European mine production	Mt	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
European mine production growth	%	*3.3%*	*0.9%*	*1.2%*	*-3.0%*	*1.8%*	*-1.8%*	*0.9%*	*2.6%*	*0.4%*	*-8.4%*	*0.0%*
World Mine Production	**Mt**	**12.10**	**12.55**	**12.72**	**12.85**	**12.96**	**13.37**	**13.04**	**13.50**	**14.21**	**14.59**	**15.27**
World Mine Production Growth	%	*7%*	*3.7%*	*1.4%*	*1.0%*	*0.9%*	*3.2%*	*-2.5%*	*3.5%*	*5.3%*	*2.6%*	*4.7%*
Concentrate for smelting	Mt	12.10	12.55	12.72	12.85	12.96	13.37	13.04	13.50	14.21	14.59	15.27
Secondary & other zinc	Mt	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4
Losses	Mt	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.6
Total Refined output	**Mt**	**12.71**	**12.97**	**12.45**	**12.94**	**13.28**	**13.93**	**14.00**	**14.47**	**15.01**	**15.32**	**16.03**
World refined availability growth	%	*14%*	*2.0%*	*-4.0%*	*3.9%*	*2.7%*	*4.9%*	*0.5%*	*3.3%*	*3.7%*	*2.1%*	*4.6%*
China Refined Consumption	Mt	4.7	5.3	5.6	6.1	6.49	6.72	6.9	7.1	7.3	7.5	7.8
Consumption growth	%	*14.8%*	*11.7%*	*6.6%*	*8.2%*	*7.0%*	*3.7%*	*2.0%*	*3.0%*	*3.4%*	*3.2%*	*3.6%*
US Refined Consumption	Mt	1.2	1.3	1.4	1.4	1.5	1.4	1.5	1.5	1.5	1.6	1.6
Consumption growth	%	*6%*	*5.9%*	*6.2%*	*0.1%*	*5.3%*	*-2.9%*	*2.5%*	*2.0%*	*2%*	*2%*	*2%*
Europe Refined Consumption	Mt	1.9	1.9	1.8	1.7	1.8	1.8	1.8	1.9	1.8	1.8	1.8
Consumption growth	%	*20.5%*	*3.1%*	*-7.9%*	*-0.9%*	*2.8%*	*2.2%*	*0.6%*	*0.5%*	*0%*	*0%*	*-1%*
Brazil/India/Russia Refined Consumption	%	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.3	1.4
Consumption growth		*15.9%*	*7.8%*	*4.3%*	*2.0%*	*-2.7%*	*-0.9%*	*4.3%*	*5.5%*	*5%*	*7%*	*5%*
World Refined Consumption	**Mt**	**11.69**	**12.55**	**12.83**	**13.31**	**13.91**	**14.11**	**14.37**	**14.72**	**15.12**	**15.53**	**15.98**
World Refined Consumption Growth	%	*15.7%*	*7.3%*	*2.2%*	*3.8%*	*4.5%*	*1.5%*	*1.8%*	*2.4%*	*2.7%*	*2.7%*	*2.9%*
Market balance	**Mt**	**1.02**	**0.42**	**-0.38**	**-0.38**	**-0.63**	**-0.18**	**-0.37**	**-0.26**	**-0.11**	**-0.21**	**0.05**
Exchange stocks	Mt	3.48	3.90	3.52	3.15	2.52	2.34	1.97	1.71	1.60	1.39	1.45
Reported-stock-to-consumption ratio	Wks	15.5	16.1	14.3	12.3	9.4	8.6	7.1	6.0	5.5	4.7	4.7
Annual average LME cash prices	**USD/t**	**2,158**	**2,212**	**1,965**	**1,940**	**2,164**	**1,931**	**1,734**	**1,813**	**1,956**	**2,100**	**2,244**
Annual average LME cash prices	**USc/lb**	**98**	**100**	**89**	**88**	**98**	**88**	**79**	**82**	**89**	**95**	**102**

Source: Deutsche Bank, Wood Mackenzie

Lead: Remaining constructive

- Lead has lagged the other base metals so far this year, up a modest 2% year to date, in contrast to sister metal Zinc which is up by 14%. A sudden increase of inventory in 2016, from a 6 year low in Dec'15 has shook the perception of a lead scarcity, and prices fell sharply. Lead prices traded below zinc for the first time since November 2015. This was followed by increase in cancelled warrants and prices subsequently rebounded. We think the stock movement is simply a distraction which detracts somewhat from the metal's decent fundamentals driven by mine depletion and closures over the next two years.
- Lead fundamentals remain very supportive, with modest deficits (100 – 200kt) over the next two to three years. Although US, European and Chinese auto sales remains robust, the slowdown of Chinese battery demand in conjunction with the maturing e bike market and a slow-down in base station construction by telecom operators has continued to weigh on demand. Adoption of alternate, cleaner and more efficient battery technologies (Li-ion in EV) is a threat to lead's long term fundamentals, despite gaining momentum. Slowing mine production from China, Europe and Australia will however more than offset this fall in demand in the short term.
- The two key risks to our constructive view over the next two years are 1) a surprise surge in supply from the secondary market. So far indications are that scrap remains tight for smelters in Europe and the US, with a mild winter limiting the supply of batteries. 2) a sharply slowing US or Chinese Auto market. The US Auto cycle is mature with sales volumes now at pre crisis levels. The risk is that sales volumes decline, which history suggests is a real possibility as opposed to our forecasts of flat sales. Likewise, the Chinese sales volumes have been boosted by a tax cut, leaving a question over volumes once the tax break ends.

Figure 145: Zinc – Lead ratio



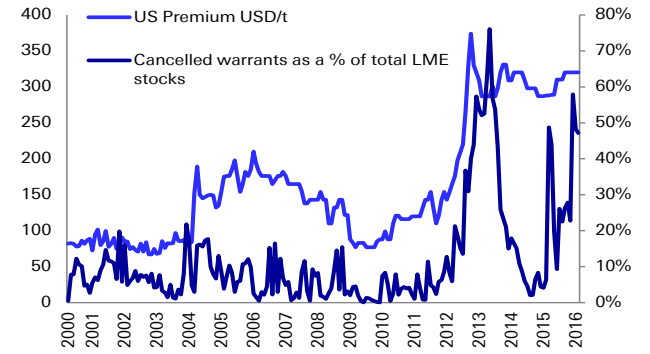
Source: Deutsche Bank, Bloomberg Finance LP

Stocks keep increasing, but cancelled warrants increase at a faster pace.

Inventory levels increased significantly after reaching a 6 year low at the beginning of Dec'15 (127kt), ending the year at 191kt. The upward trend continued and by the start of March 2016, LME inventory stood at 213kt, up 11% YTD. The increase in inventory by 38kt in a short span of time in February sent signal of abundance and prices plummeted. However prices rebounded sharply due to an increase in cancelled warrants. Cancelled warrants as a

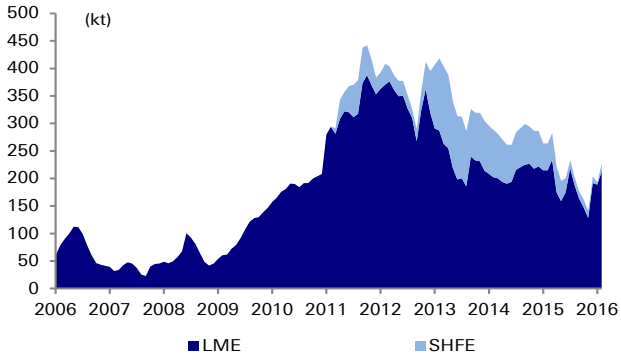
percentage of LME inventory remains relatively high (46%-58%) in 2016. In contrast to copper, SHFE stocks continue to fall and towards end of January 2016, stocks were as low as 4kt, but subsequently rose to normal levels (around 15kt). Lead prices in China rocketed due to the supply squeeze and smelters were open during festive season to meet the demand and take advantage of the price response. The fall in inventory was because of buying by battery producers, to cater to the higher demand caused by the recent cold snap. US premiums have been steady throughout the year at decent levels, signaling decent regional demand. SHFE inventory has returned to "normal" levels.

Figure 146: US premiums vs cancelled warrants



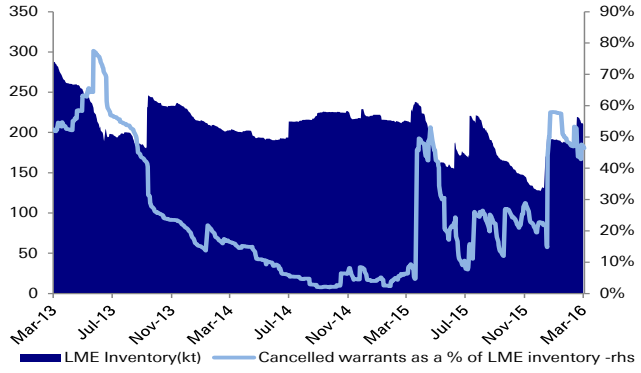
Source: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie

Figure 147: Lead exchange inventory



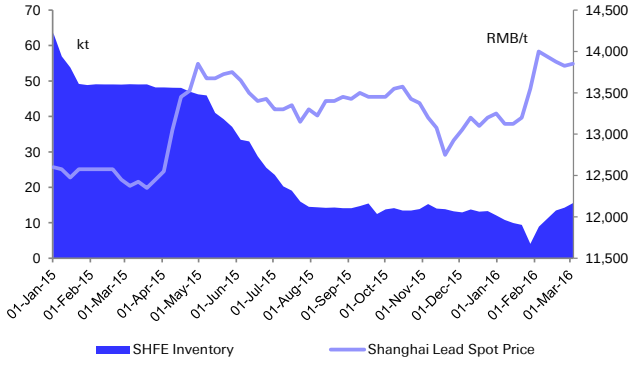
Source: Deutsche Bank, Bloomberg Finance LP

Figure 148: LME Inventory vs LME cancelled warrant as % of inventory



Source: Deutsche Bank, Bloomberg Finance LP

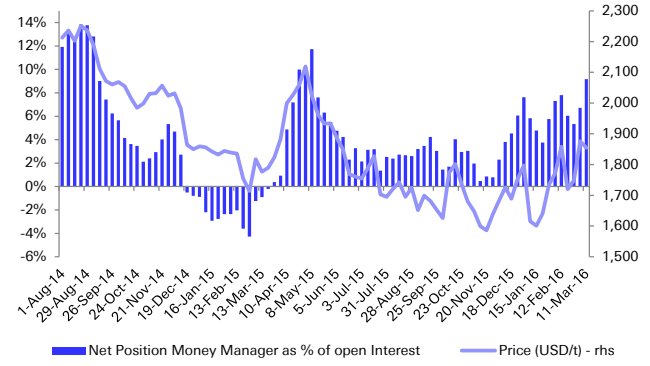
Figure 149: Price reacts strongly to inventory flows



Source: Deutsche Bank, Bloomberg Finance LP

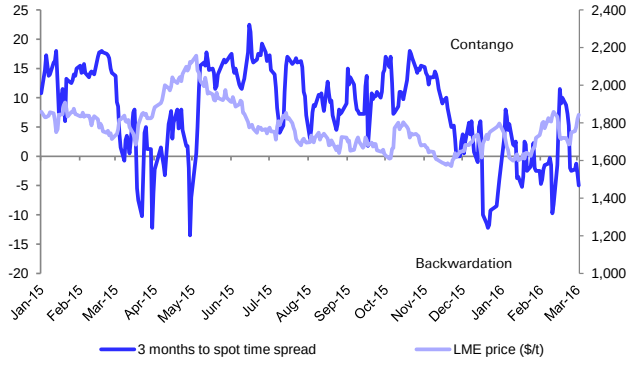
Positioning in the money manager category on the LME has remained relatively bullish throughout Q1'16; around (5-8%). The swing in perception of on abundance and scarcity of metal is reflected by the frequent swapping between contango and backwardation during February.

Figure 150: Net Money manager positions - % of open interest



Source: Deutsche Bank, LME

Figure 151: Lead near-term time spreads



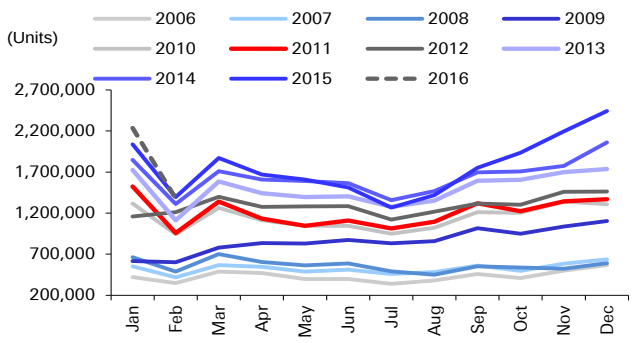
Source: Deutsche Bank, Bloomberg Finance LP

We remain positive on the short to medium term outlook for lead and forecast a flat Chinese mine production in 2016 versus 2015. Chinese refined lead production has fallen by c.7% in 2015 and 2016 will also see a similar trend as mine supply cut around the world take effect after their announcement in Q3 2015. Tougher pollution control standards set by the Chinese government on both primary and secondary production will continue to constrain refined metal output. Replacement battery which accounts for more than 40% of total lead consumption is growing at a robust rate and to a certain extent is less sensitive to global economic conditions. Replacement demand is mostly dependent on extremity of weather conditions and when a car's battery fails they have to be replaced. This should offset the continuation of slowing e bike sales in the medium term. The threat of alternative battery technology remains a threat over the longer term.

Auto demand to remain robust, but some questions over the sustainability over the US emerges

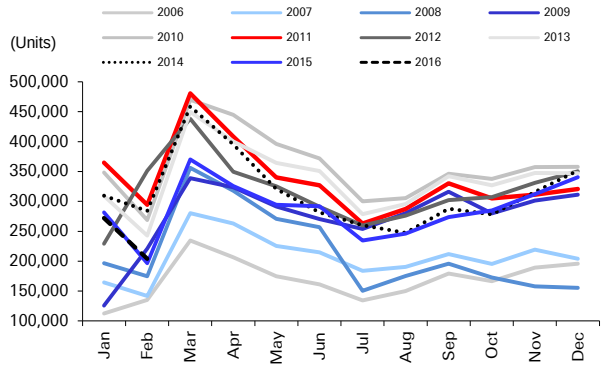
Chinese passenger vehicles sales rebounded sharply after the Government cut taxes by half for <1.6l capacity vehicles in September last year. Sales continued to improve in 2016 and cumulative 2M passenger vehicle in 2016 increased by 5.2% when compared to 2M sales of 2015. The sale of commercial vehicles continued to suffer with 2M sales in 2016 down by 0.5% when compared to 2M 2015 sales. Our Chinese Auto team believes that the auto demand for 2016 is believed to be strong and is forecasted to grow by 8.2%, despite a slower growth of 5.2% during the festive season. Strong growth in China and India's auto sales is an ongoing driver of demand in our view.

Figure 152: Passenger Vehicles sales in China



Source : Deutsche Bank, CAAM

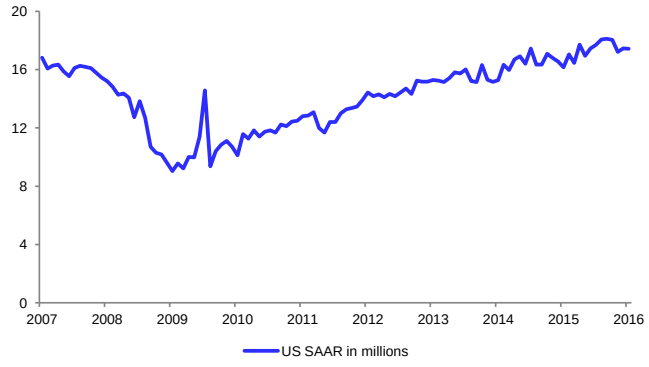
Figure 153: Commercial Vehicles sales in China



Source: Deutsche Bank, CAAM

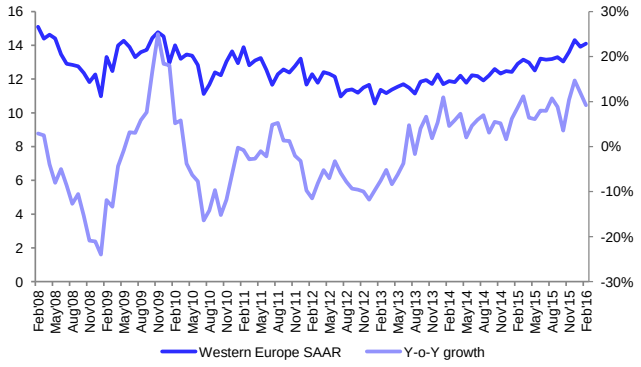
The US car sales and SUV sales remain robust thanks to the lower gasoline prices, which in turn is good for the battery and lead demand. Passenger vehicles sales increased up by c.5% / 8% in January/February y-o-y. US auto sales have peaked but there is relatively low risk (so far) of a substantial drop to below trend levels according to our US auto team. Western European automobile sales have been robust in Q1'16 with January and February sales up year on year by c.12% and 9% respectively. Western European SAAR for February stood at 14.1MM.

Figure 154: US auto sales



Source: Deutsche Bank, Bloomberg Finance LP

Figure 155: Western European auto sales



Source: Bloomberg Finance LP, Deutsche Bank

Long term trends for lead batteries

One of the concerns for long term lead demand is the rapid pace of growth in electric vehicles and plug in hybrids. In 2015, more than half a million electric / hybrid vehicles were sold throughout the world and China saw a boost to mini EV sales thanks to the incentives provided by the Chinese government to tackle pollution concerns. The Chinese government announced last year they would develop facilities to produce 5 million plug in hybrids by 2020. They also announced incentives such as lower insurance premium, lower tax and access to urban road networks when other vehicles are banned due to high pollution levels. According to Bloomberg, costs in Lithium – ion batteries have fallen 65% since 2010 leading to a significant reduction in cost of EV and boosting sales in 2015. These cars would still required lead batteries, but the quantity of lead per vehicle is lower.

On the flipside, the greater adoption of SSV (start stop vehicles) will be a significant boost to lead demand as they need 25% more lead per battery than SLI (Starting, Lighting, Ignition) battery. About 2/3 of the cars sales in Europe

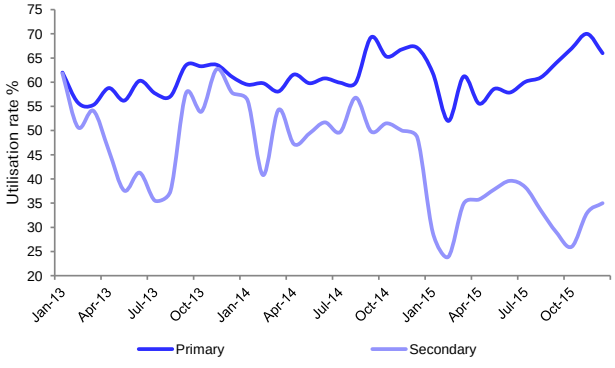
and Japan use SSV and China and the US are fast catching up. Another characteristic of SSV battery is that they need lead of very high quality and hence the secondary smelters which produce replacement batteries have to improve they technology to produce lead of required standards.

Chinese smelter utilization in 2015 was disappointing

The Chinese primary (61%) and secondary (33%) utilization levels in 2015 remained lower than that of 2014 (primary (62%) and secondary (50%)). The Chinese secondary smelting industry has been squeezed to unsustainable levels, due to high scrap prices and a maturing e-bike market. A slowdown in e bike sales has drastically hit the utilization rate in 2015. Meanwhile the primary smelter utilization matured and is expected to fall down in 2016, due to slowing Chinese demand and also due to the tightness in concentrate market due to the proposed mine supply cut. Despite an improvement in the positive arbitrage between the SHFE and the LME the primary smelter utilization is likely to fall.

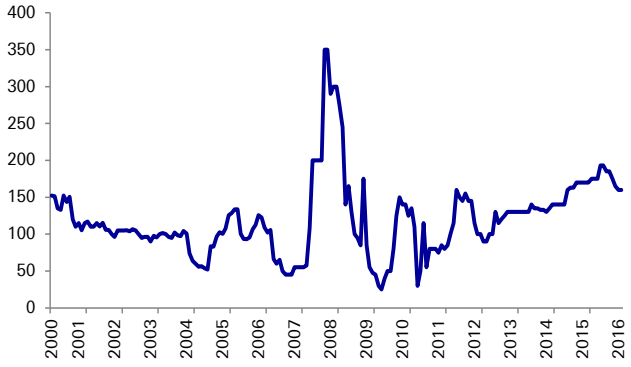
The positive arbitrage between SHFE and LME fell for the third consecutive month to USD42/t in February from around USD66/t in January 2016. This translates to about USD195/t from Spot TC and arbitrage for concentrates. Despite a favorable arbitrage, concentrate imports in January 2016 (95kwmt) were 50% lower than December 2015 figures. The fall in imports was mainly due to the low availability of lead concentrate in the market due to recent cuts. The spot TCs have stayed flat at USD160/t in February 2016, but is in a downward trend since July 2015, suggesting a continued tightening in concentrate supply.

Figure 156: Chinese Primary vs Secondary Smelter utilization rate



Source: Deutsche Bank, National Statistic Bureau

Figure 157: Lead TCs (USD/t)



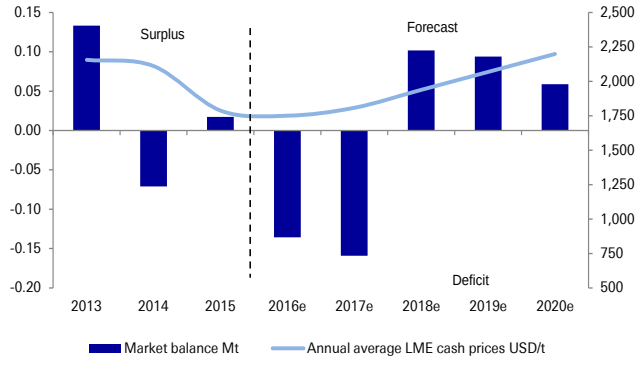
Source: Deutsche Bank, Wood Mackenzie

We forecast mined production to be down 4% at 5.2Mt in 2016 and rebound by 3% in 2017E to 5.33Mt. Our forecast for total refined production is 12.18Mt, a growth of 2% y-o-y outstripping mined supply growth as scrap improves through the course of the year, predicated on improving prices. So far this has not been the case for the beginning of 2016. We forecast global consumption to grow by 3.0% to 12.32Mt, leaving the market in a slight deficit after a balanced outcome in 2015. Demand growth in 2015 of 1.8% was relatively muted, and we expect a small pick up in the period 2016 – 2017E, but certainly not returning to the +4% era pre 2016.

The closure of Century in late 2015 has been confirmed and together with the Glencore shuts should see Australian mine output contract by 21%. There have been other price related closures associated to zinc. These have however also impacted the lead market. CBH Resources, owned by Toho Zinc, has announced it is to cut production at the Endeavor mine in the 2016-2017 financial year by around 80%. The move is to preserve resources for when

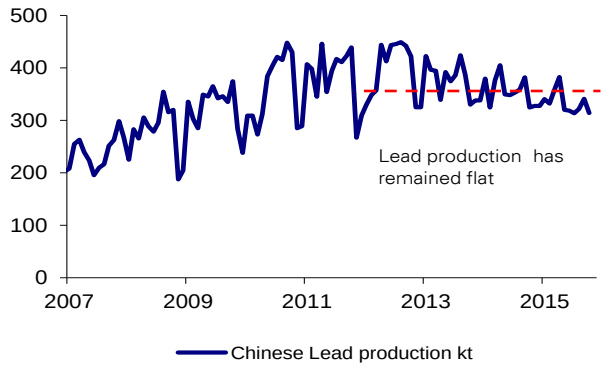
metal prices recover. We estimate that this will result in production of around 9kt Zn and 3kt Pb in the 2016 calendar year and 23kt Zn and 10kt Pb in 2017, with the mine on care-and-maintenance for around nine months. This may extend the mine life to 2019, based on reserves. The Doe Run Company has announced it is cutting lead production from its mines in southeast Missouri by around 20kt Pb in 2016, which is around 10% of annual output. As a consequence, it is also reducing zinc and copper output for a loss of around 3kt Zn and 0.5kt Cu. The company attributed the cuts to depressed metal prices and increased operational expenses and uncertainties related to regulatory requirements.

Figure 158: Global lead market balance



Source: Deutsche Bank, Wood Mackenzie

Figure 159: Chinese lead production



Source: Deutsche Bank, NBS

Figure 160: Global Lead supply & demand model

		2011	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
China mine production	Mt	2.3	2.5	2.8	3.0	3.0	3.0	3.0	3.0	3.1	3.1
China mine production growth	%	*28%*	*7%*	*14%*	*5%*	*1%*	*1%*	*1%*	*0%*	*0%*	*0%*
Australia mine production	Mt	0.6	0.6	0.7	0.7	0.6	0.5	0.6	0.6	0.7	0.6
Australia mine production growth	%	*-11%*	*-1%*	*15%*	*4%*	*-13%*	*-21%*	*19%*	*9%*	*8%*	*-3%*
Peru mine production	Mt	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Peru mine production growth	%	*-11%*	*7%*	*9%*	*7%*	*6%*	*-2%*	*-2%*	*0%*	*-6%*	*-4%*
North America mine production	Mt	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
North America mine production growth	%	*2%*	*2%*	*-2%*	*3%*	*2%*	*7%*	*3%*	*-1%*	*-1%*	*-4%*
World Mine Production	**Mt**	**4.48**	**4.71**	**5.21**	**5.41**	**5.41**	**5.20**	**5.33**	**5.70**	**5.91**	**6.17**
World Mine Production Growth	%	*12%*	*5%*	*11%*	*4%*	*0%*	*-4%*	*3%*	*7%*	*4%*	*4%*
Losses	Mt	0.29	0.30	0.32	0.33	0.33	0.32	0.33	0.35	0.36	0.38
Scrap	Mt	1.0	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0
Production at Primary Refineries	Mt	5.0	5.1	5.5	5.7	5.8	5.7	5.9	6.3	6.4	6.6
Secondary refined prodcution	Mt	5.4	5.7	5.9	6.0	6.1	6.5	6.7	6.9	7.1	7.2
Total Refined Availability	**Mt**	**10.43**	**10.85**	**11.41**	**11.67**	**11.98**	**12.18**	**12.52**	**13.12**	**13.46**	**13.79**
World refined availability growth	%	*8%*	*4%*	*5%*	*2%*	*3%*	*2%*	*3%*	*5%*	*3%*	*2%*
China Refined Consumption	Mt	4.2	4.7	5.1	5.4	5.5	5.7	6.0	6.2	6.5	6.7
Consumption growth	%	*6%*	*12%*	*8%*	*5%*	*2%*	*4%*	*4%*	*4%*	*4%*	*4%*
NAFTA (US, Canada, Mexico)	Mt	1.7	1.8	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8
Consumption growth	%	*3%*	*1%*	*-3%*	*1%*	*2%*	*1%*	*1%*	*1%*	*1%*	*1%*
Japan	Mt	*19%*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Consumption growth	%	*-2%*	*9%*	*1%*	*1%*	*-4%*	*-2%*	*-2%*	*-2%*	*-2%*	*-2%*
EU (15)	Mt	*131%*	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Consumption growth	%	*3%*	*-3%*	*1%*	*1%*	*2%*	*1%*	*0%*	*-1%*	*-1%*	*-1%*
Brazil/India/Russia Refined Consumption	Mt	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6
Consumption growth	%	*5%*	*12%*	*8%*	*7%*	*5%*	*6%*	*6%*	*5%*	*5%*	*5%*
World Refined Consumption	**Mt**	**10.14**	**10.77**	**11.28**	**11.74**	**11.96**	**12.32**	**12.68**	**13.02**	**13.37**	**13.74**
World Refined Consumption Growth	%	*5%*	*6%*	*5%*	*4%*	*2%*	*3%*	*3%*	*3%*	*3%*	*3%*
Market balance	**Mt**	**0.29**	**0.08**	**0.13**	**-0.07**	**0.02**	**-0.14**	**-0.16**	**0.10**	**0.09**	**0.06**
Exchange stocks	Mt	1.33	1.46	1.60	1.52	1.54	1.41	1.25	1.35	1.44	1.50
Reported-stock-to-consumption ratio	Wks	6.8	7.1	7.4	6.7	6.7	5.9	5.1	5.4	5.6	5.7
Annual average LME cash prices	**USD/t**	**2,391**	**2,074**	**2,156**	**2,111**	**1,787**	**1,750**	**1,808**	**1,938**	**2,069**	**2,199**
Annual average LME cash prices	**USc/lb**	**108.5**	**94.1**	**97.8**	**95.8**	**81.1**	**79.4**	**82.0**	**87.9**	**93.9**	**99.8**

Source: Deutsche Bank, Wood Mackenzie

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Steel Making Materials

2016 may be better than expected, but the market is setting itself up for a tough 2017

- We continue to think the residential construction sector will be the catalyst to spark a recovery in the Chinese **steel** sector. The steadily rising steel price in China has been the result of both loosening credit conditions (as highlighted by the January TSF number) and low inventory levels. The most recent property data indicates an improvement in both price and volumes, which suggest that some of the credit loosening is making its way into the metals intensive sectors. Inventory levels, especially in the tier 3 and 4 cities remain high, and unless credit creation is much stronger than anticipated and lasts for longer, we remain cautious on Chinese steel output. Although trade cases against Chinese steel exports are picking up momentum, we continue to see Chinese over capacity dampening output in the rest of the world.
- **Iron ore** prices have fallen for 8 straight quarters. Due to a combination of supply cuts, supply shocks (Samarco), seasonal weather disruptions to supply and seasonal restocking in both steel and iron ore, we had forecast a small price increase to USD50/t for Q1'16. A price spike to over USD60/t was most certainly not in our thinking. The technically driven price spike notwithstanding, the current price does indicate that the market is currently experiencing a shortage. This "shortage" is temporary in our view. Much depends on the behaviour of domestic iron ore producers post Chinese New year (ie do they turn the taps on) and the longevity of the credit cycle / property recovery. Already there have been some reports of restarts from Cliffs and Shandong. We continue to estimate that a further supply cut of c.130Mt in the mid-tier producers from Australia and Brazil will be required in a zero steel demand growth environment to balance the market. This will only happen at lower prices, and we see a minimum six month – nine month period of sub USD45/t prices to force these closures.
- **Coking Coal** prices have also responded to the increase in credit availability, liquidity, sentiment and most importantly the improving property market signals in China. The exuberance seen in the iron ore market is lacking in coking coal, but there may be enough momentum to see a Q2 settlement slightly better than Q1, the first in over eight quarters. Although we have seen significant cuts in supply especially out of the US, the coking coal market remains well supplied. Whilst we forecast rising Indian imports, the key sensitivity remains which is Chinese domestic supply. In the face of shrinking domestic demand, we forecast Chinese output to remain flat and possibly even contract. If this does not happen, exports will continue to be "crowded out". Over a quarter of the seaborne market is currently loss-making, so we do expect further cuts mainly in the US. The creditor takeover of the US coal sector will however mean that the process will be slow.

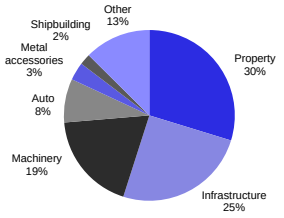
Remaining cautious on Chinese steel demand

The property sector is rolling over before inventories are low enough in the right regions

As a reminder nearly three quarters of Chinese steel demand can be traced back to Property (30%), Infrastructure (25%) and Manufacturing / Machinery (20%). In 2015, Infrastructure was a slight buffer to the weakness in Property and Manufacturing resulting in a 5.2% yoy decline in apparent demand and a 2.3% yoy steel output decline. This is the second year of apparent steel demand decline with 2014 declining by 1.3% yoy. This was however the first year of steel output in China. Our previous forecast of a moderate 1.5% apparent steel demand decline was based on a recovery in Property starts and inventory levels were pulled down to more manageable levels.

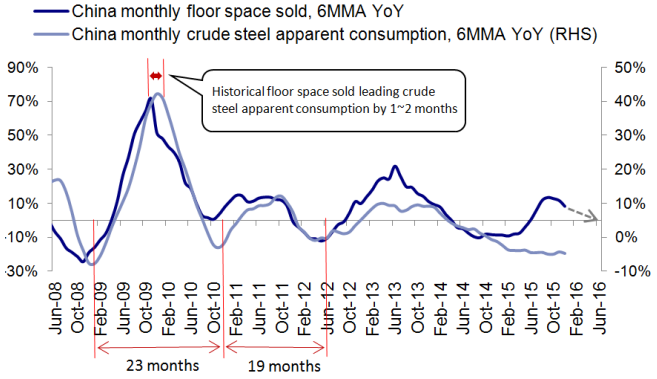
We continue to forecast weak Chinese steel demand in 2016 with our previous demand forecasts of a small rebound looking too optimistic. Property sales displayed positive yoy growth for most of 2015, and FAI (fix asset investment) into infrastructure also stayed in the high teens, and yet steel consumption was negative. Property sales growth is starting to roll over, as Figure 162 indicates, and yet property inventory remains high in China especially in Tier3/4 cities. Our view is therefore that steel demand attributed to the property sector will register another year of declining demand. The strong increase in credit reported in January, added to the credit momentum, and has started to manifest itself in improving property sales (both volumes and prices). The improvements are however centered on the tier 1 and 2 cities, which is not where the inventory problem lies. We do however accede that the longer the credit cycle continues and the larger the magnitude, the more potential for an upside demand surprise.

Figure 161: Composition of Chinese steel demand in 2015



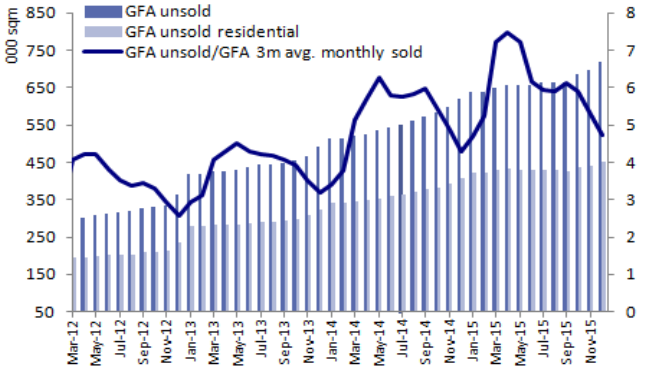
Source: Deutsche Bank, CISA

Figure 162: Property sales vs. crude steel consumption



Source: Deutsche Bank, NBS, Wind

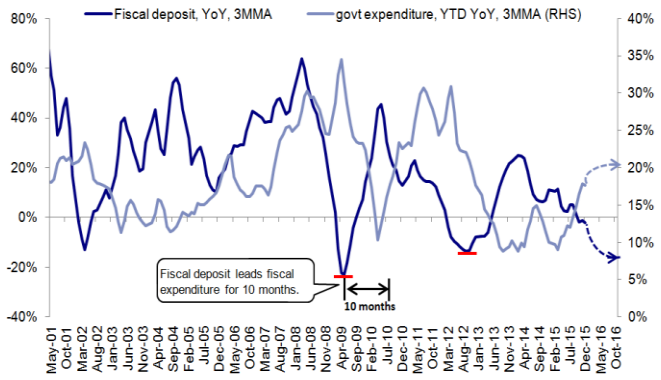
Figure 163: GFA unsold



Source: Deutsche Bank, NBS, Wind

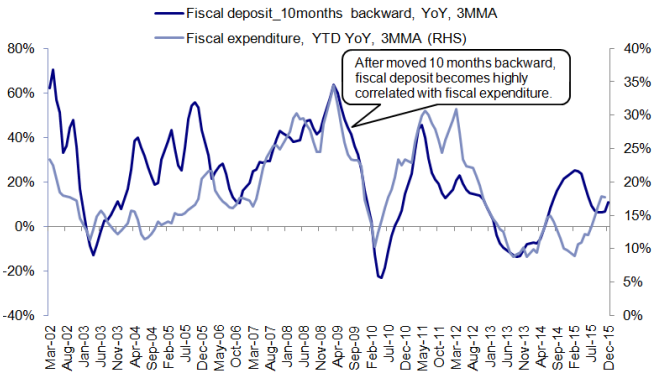
We think that government expenditure will remain robust for the early part of 2016. However, the Chinese government will need to tackle its weak fiscal deposit balance and decide whether it wants to further increase its leverage and stretch their balance sheet to maintain government expenditure at current levels. We believe the government's intention is to stabilise the economy rather than continuously boost it. As such, we believe demand from government expenditure might be strong in 1H16, but then slow down potentially in 2H16. Deutsche Bank's China chief economist, Zhiwei Zhang is forecasting overall FAI growth at 10%, similar to 2015.

Figure 164: Fiscal deposit vs. government expenditure



Source: Deutsche Bank, NBS, PBOC

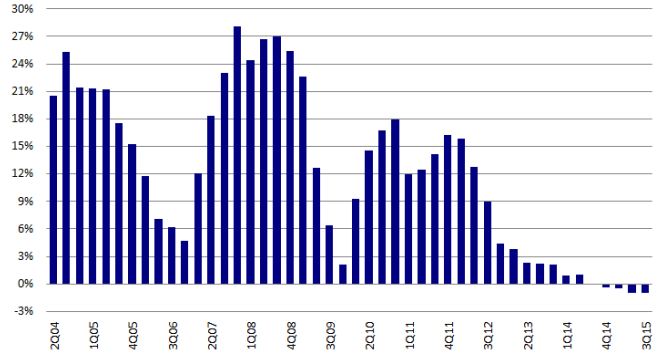
Figure 165: Fiscal deposit vs. government expenditure



Source: Deutsche Bank, NBS, PBOC

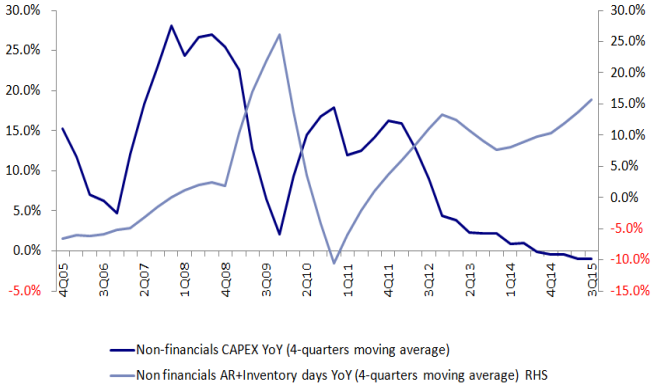
We believe a further contributor to steel demand weakness in 2015 was the decline of manufacturing capex (Figure 166 and Figure 167). With low utilisation in the system and a slowdown in the consumption growth rate, it is likely that the capex cycle will remain negative in 2016. As such, the outlook for the machinery sector is likely to remain sluggish.

Figure 166: Non-financial sector capex growth rate yoy



Source: Deutsche Bank, Wind

Figure 167: Capex vs. AR + inventory days



Source: Deutsche Bank, Wind

As a result of these three drivers, we have cut our 2016 apparent demand forecast to a -3.1% yoy, from a decline of less than 2%. We continue to forecast a decline in the property and machinery sectors, assuming 8% and 5% yoy declines in 2016, respectively. We assume a flat yoy steel demand contribution from infrastructure.

For 2017 onwards, we assume property inventory levels are drawn down to "normal" levels in 2017, and then into 2018/19, we assume a mild recovery, with growth rates at 2-3%. However, a recovery in the property sector should also mean that the Chinese government will be able to slow down its push in infrastructure, and thus we assume a mild decline in the steel demand contribution from infrastructure in 2017-19. In the machinery sector, we also assume a mild recovery from 2017 onwards. For overall underlying demand, we forecast growth rates of 0.1%, 0.8% and 1.1% for 2017, 2018, 2019, respectively, after declines of 5% and 3.3% in 2015 and 2016, respectively.

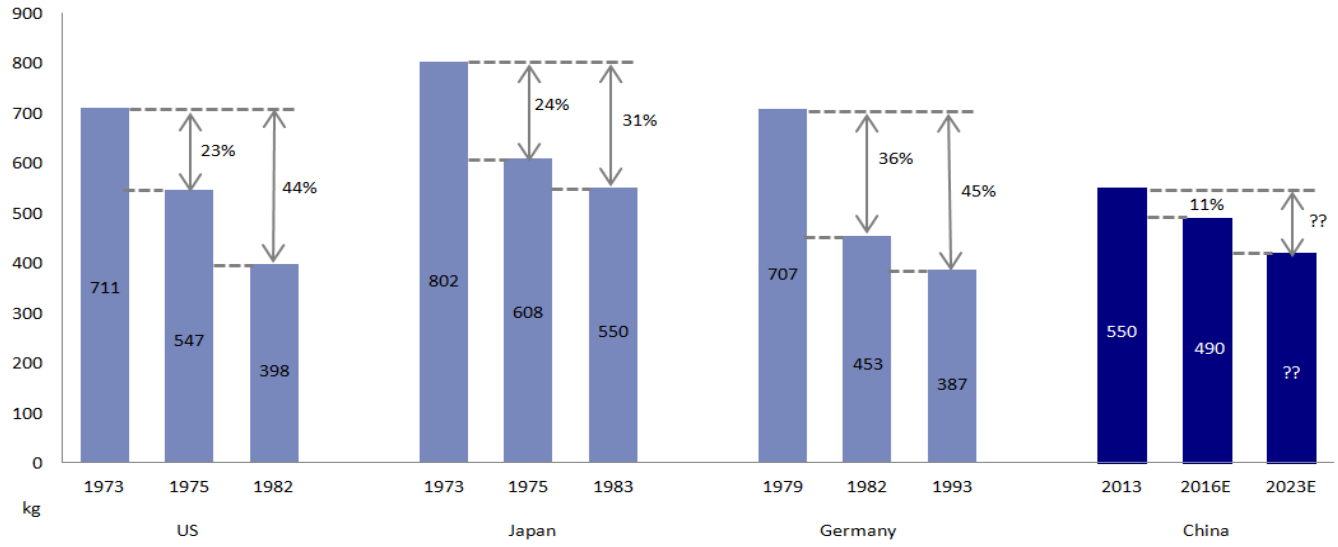
Figure 168: China steel demand breakdown forecasts (2012-19E)

	2012	2013	2014	2015	2016E	2017E	2018E	2019E
Consumption by application (%)								
Property	33.4%	33.6%	31.4%	29.7%	28.3%	28.3%	28.6%	29.1%
Infrastructure/construction	23.2%	22.9%	23.8%	25.2%	26.1%	25.5%	24.5%	23.3%
Machineries	18.8%	19.1%	19.8%	18.7%	18.4%	18.7%	19.1%	19.5%
Autos	6.6%	6.9%	7.5%	8.3%	9.0%	9.4%	9.8%	10.2%
Metal accessories	3.2%	3.1%	3.2%	3.4%	3.6%	3.7%	3.7%	3.7%
Shipbuilding	2.2%	2.0%	1.9%	2.1%	1.9%	1.8%	1.8%	1.9%
Home appliances	1.9%	1.9%	2.0%	2.2%	2.3%	2.3%	2.3%	2.4%
Petro/energy	1.8%	1.7%	1.7%	1.5%	1.5%	1.5%	1.5%	1.6%
Coal	1.8%	1.9%	1.7%	1.6%	1.5%	1.4%	1.4%	1.4%
Containers	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Packaging	1.0%	1.0%	1.0%	1.1%	1.2%	1.2%	1.3%	1.3%
Power	0.8%	0.8%	0.9%	1.0%	1.1%	1.1%	1.1%	1.1%
Others	5.1%	4.9%	4.8%	4.8%	4.8%	4.6%	4.5%	4.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Consumption by application (m tonnes)								
Property	227	249	232	209	192	192	196	202
Infrastructure/construction	158	170	176	177	177	173	168	161
Machineries	128	142	146	131	125	127	131	135
Autos	45	51	55	58	61	64	67	71
Metal accessories	22	23	23	24	24	25	25	26
Shipbuilding	15	15	14	15	13	13	13	13
Home appliances	13	14	15	15	15	16	16	17
Petrochemicals/energy	12	13	13	11	10	10	10	11
Coal	12	14	13	11	10	10	10	10
Containers	2	2	2	2	2	2	2	2
Packaging	7	7	8	8	8	8	9	9
Power	5	6	7	7	7	8	7	8
Others	35	36	35	34	32	32	31	30
Total	**680**	**742**	**739**	**702**	**678**	**679**	**685**	**693**
Consumption growth assumption (yoy %)								
Property	6.0%	9.8%	-7.0%	-10.0%	-8.0%	0.0%	2.0%	3.0%
Infra/construction	3.0%	7.7%	3.5%	0.5%	0.0%	-2.0%	-3.0%	-4.0%
Machineries	6.5%	10.9%	3.0%	-10.0%	-5.0%	2.0%	3.0%	3.0%
Autos	11.5%	14.1%	8.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Metal accessories	4.8%	5.7%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Shipbuilding	-11.3%	-0.8%	-4.0%	3.0%	-10.0%	-5.0%	0.0%	3.0%
Home appliances	4.8%	9.1%	5.0%	2.0%	2.0%	2.0%	2.0%	3.0%
Petro/energy	4.8%	3.1%	1.0%	-15.0%	-5.0%	0.0%	2.0%	3.0%
Coal	17.9%	15.2%	-10.0%	-10.0%	-10.0%	-5.0%	0.0%	0.0%
Containers	-37.1%	9.1%	4.0%	-3.0%	-5.0%	-3.0%	0.0%	3.0%
Packaging	4.8%	9.1%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Power	7.6%	16.4%	10.0%	8.0%	6.0%	2.0%	-3.0%	2.0%
Others	0.8%	4.8%	-3.0%	-5.0%	-3.0%	-3.0%	-3.0%	-3.0%
Overall	4.8%	9.1%	-0.4%	-5.0%	-3.3%	0.1%	0.8%	1.1%

Source: Deutsche Bank estimates

Using the example of developed economies such as the US, Japan and Germany, once per capita apparent steel demand has peaked, the decline can be significant in the two to three years after the peak year and even 10 years subsequently. Considering that the US, Japan and Germany all experienced 20-30% demand declines in the two to three years after peaking, our demand decline forecast for China of 11%, after the peak year in 2013, is relatively conservative.

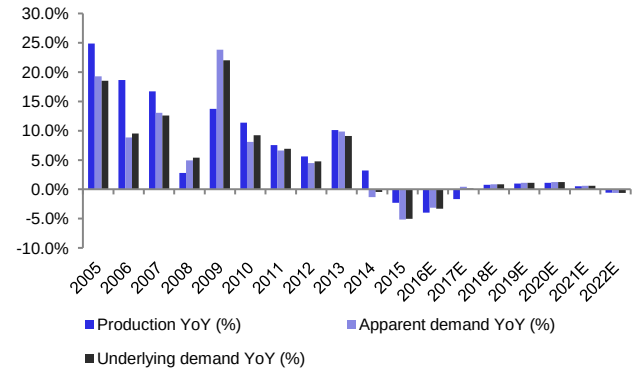
Figure 169: Per capita steel apparent consumption for the US, Japan, Germany and China in peak year and post-peak years



Source: Deutsche Bank estimates, Wind, CEIC

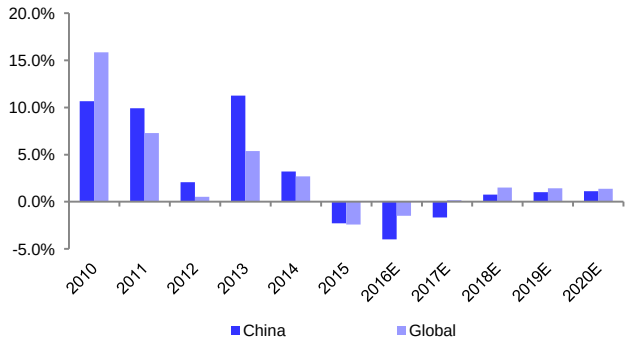
We outline our China forecasts and global steel forecasts in the charts below: The key points to note are that Chinese steel output is no longer going to outstrip that of global demand, rather we expect Chinese steel growth to lag global steel output. In 2016 however, we forecast a second year of declining global steel output. We forecast declines in all the main steel producubg regions; Japan (-1%), Brazil (-1%), Russia (-1%) and the US (-0.5%). India is the region with the largest supply growth at 5%.

Figure 170: China steel output, apparent and real demand



Source: Deutsche Bank, CISA

Figure 171: Global steel production forecasts



Source: Deutsche Bank, WSA

Global anti-dumping starting to take effect

According to our checks, anti-dumping efforts against Chinese steel exports will start to have more of an impact on China's steel exports. Figure 172 shows the anti-dumping efforts from China's major export markets. Numerous anti-dumping filings have been sustained, and anti-dumping tax rates have also started to apply to Chinese exports.

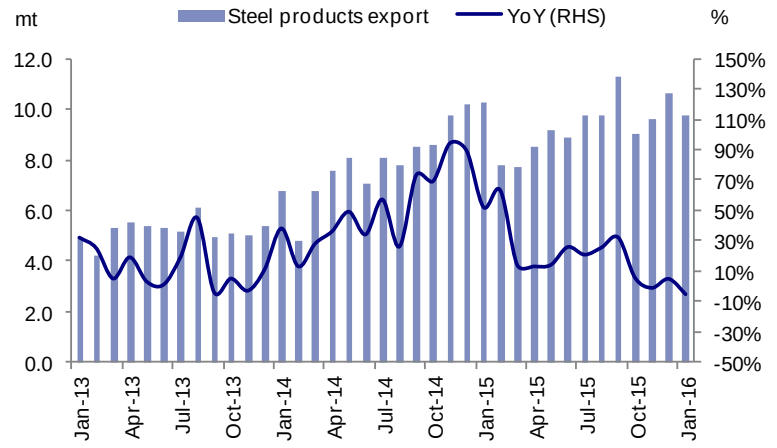
In January 2015, Chinese steel exports declined by 5% yoy, and we believe that this trend will continue (Figure 173). We forecast that net exports will decline by c.15%, from 100mt to c.85mt in 2016, and by a further 12% yoy, to 75mt, in 2017. With weak domestic demand and shrinking exports, Chinese steel production will fall c.5% yoy and 1% yoy in 2016E and 2017E, respectively.

Figure 172: Anti-dumping filings from top Chinese export countries

Country	Product category	Sustained?	Anti-dumping tax rate
EU	Grain-oriented flat-rolled products of silicon-electrical steel	Yes. Effective from Oct 2015	36.60%
EU	Seamless pipes and tubes	Yes. Effective from Dec 2015	17.7% - 39.2%
EU	Tube and pipe fittings of iron or steel	Yes. Effective from Oct 2015	58.60%
EU	Flat-rolled products of iron or non-alloy steel, or other alloy steel but excluding of stainless steel	Yes. Effective from Feb 2016 for 6 months	13.8% - 16%
EU	Steel concrete reinforcement bars and rods	Yes. Effective from Jan 2016 for 6 months	9.2% - 13%
EU	Bars and rods, hot-rolled, in irregularly wound coils, of iron or steel	Yes. Effective from Oct 2015	24%
India	Hot-rolled flat products	Temporary safeguard tax for 200 days	20%
India	Stainless cold-rolled plate	Yes. Effective for five years	57.39%
India	Seamless tubes, pipes & hollow profiles of iron, alloy or non-alloy steel	Under review	n/a
Indonesia	Alloy and non-alloy steel wire rod products	Safeguard tax for 3 years since Aug 2015	14.5% for the first year, 10% for the second year and 5.5% for the third year
Korea	H-Beams	Yes. Effective for five years	28.23% - 32.72%
Malaysia	Pre-painted and color-coated steel coils	Yes. Effective for five years	52.10%
Malaysia	Hot-rolled carbon steel coil	Yes. Effective from Feb 2014 for five years	15.62%
Thailand	Low-carbon wire rod	Yes. Effective from Sep 2015 for 4 months	17.16% - 34.44%
Thailand	Hot-rolled flat products	Under review	n/a
Thailand	Structural hot rolled H-Beam with alloy	Under review	n/a
US	Corrosion-resistant steel products	Yes	256.00%
US	Non-Malleable Cast Iron Pipe Fittings	Yes. Effective from January 8, 2015	75.50%
US	Iron construction castings	Under full five-year ("sunset") reviews	n/a
Vietnam	Stainless cold-rolled products	Yes. Effective from Oct 2014 for five years	maximum 37%

Source: Deutsche Bank, Directorate General of Inspection Customs and Central Excise, European Commission, United States International Trade Commission, Bloomberg Finance LP, Glinfo,

Figure 173: China steel product exports and yoy trend

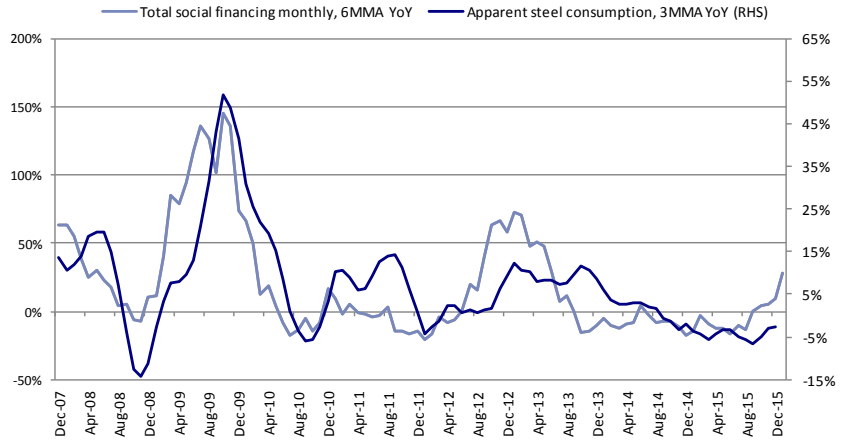


Source: Deutsche Bank, CEIC

Easing credit can inflate Chinese apparent demand

As shown in Figure 174, historically, strong total financing growth in China can stimulate better apparent steel demand growth. From late 2015, China started to see stronger total financing growth, and investors might take this as a positive sign for demand to pick up. However, we would highlight that, historically, strong total social financing growth also triggers steel mills to overproduce, and thus steel spreads (proxies of steel mill profitability) were severely hit not long after total social financing picked up.

Figure 174: Total social financing yoy vs. apparent steel consumption yoy

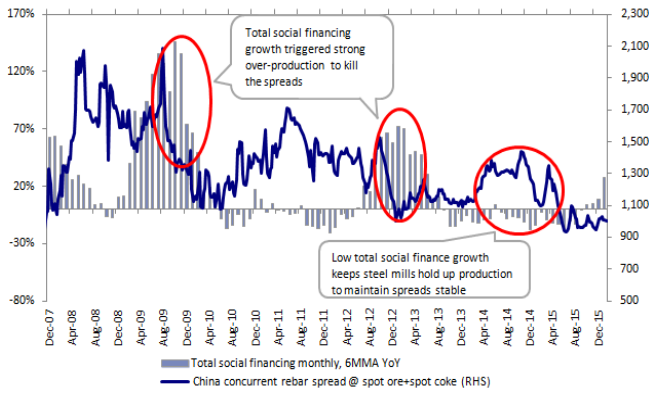


Source: Deutsche Bank, PBOC, CEIC, Wind

Interestingly, during times when total social financing was less influential, in 2011 and 2014, Chinese steel mills enjoyed a long period of stable spreads. We think this highlights the fact that when total social financing starts to pick up, this might help demand to some degree, the supply side is also triggered to over-produce. This can also help to explain why steel mills in Tanshan seem to ramp up more production during and after the Chinese New Year, as shown in Figure 177. This is also why we believe there is still policy confusion in China.

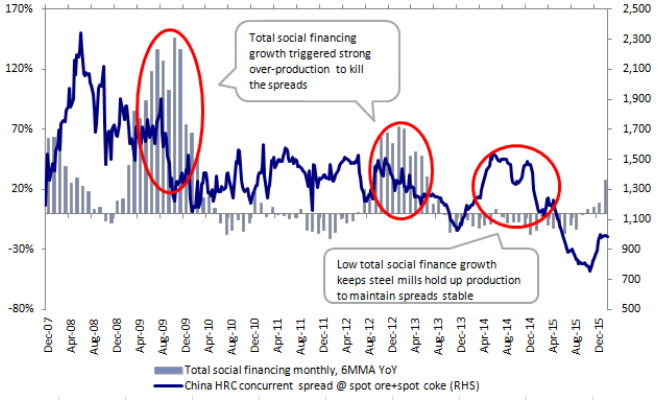
Bear in mind that a high-profile "Supply Side Reform" announcement from the Chinese government may signal a slightly more positive about D/S outlook. As such, steel mills may try to hang on a little longer.

Figure 175: Total social financing yoy vs. rebar spreads



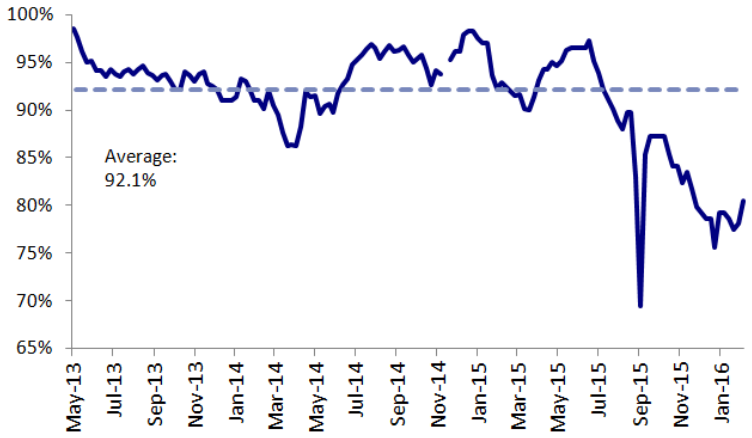
Source: Deutsche Bank estimates, PBOC, CEIC, Wind

Figure 176: Total social financing yoy vs. HRC spreads



Source: Deutsche Bank estimates, PBOC, CEIC, Wind

Figure 177: Blast furnace utilisation rate in Tangshan



Source: Deutsche Bank, Wind

China steel utilization to remain below 80% until 2019

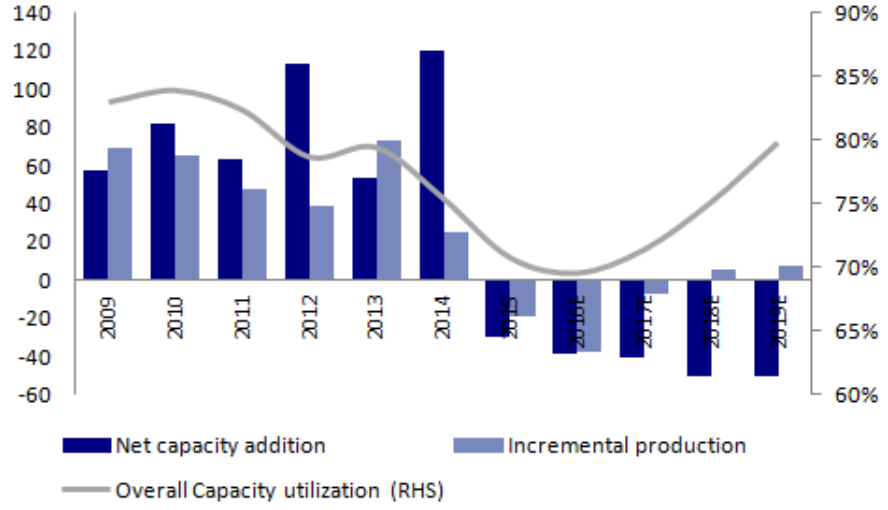
Even if we assume that there are significant supply side reforms, we believe the utilisation rate of the Chinese steel industry will not recover to c.80% until 2019. 80% utilisation should be similar to 2011-13, when most Chinese steel mills were at breakeven or made slight profits (see Figure 178 and Figure 179). We expect the capacity will be rationalised at a slow pace of c.3-5% from 2016 to 2019. Nevertheless, we expect the industry utilisation rate will not recover quickly, owing to lacklustre demand expectations. We forecast steel production will decline further, at 4.0% yoy and 1% yoy in 2016 and 2017, respectively, after a 2.3% yoy drop in 2015. After that, we estimate that production will continue to grow slowly, below 1% in 2017 to 2019.

Figure 178: China crude steel supply and demand balance (2012-19E)

(mmt)	2012	2013	2014	2015	2016E	2017E	2018E	2019E
Capacity	**976**	**1030**	**1150**	**1120**	**1082**	**1042**	**992**	**942**
+ Net/gross addition	113	54	120	30	12	10	0	0
- Phase out		8	25	60	50	50	50	50
Capacity growth %	*13.1%*	*5.5%*	*11.7%*	*-2.6%*	*-3.4%*	*-3.7%*	*-4.8%*	*-5.0%*
Production	**724**	**797**	**823**	**804**	**772**	**759**	**765**	**772**
Production growth	*5.6%*	*10.1%*	*3.2%*	*-2.3%*	*-4.0%*	*-1.7%*	*0.8%*	*1.0%*
Capacity utilisation	*78.7%*	*79.5%*	*75.5%*	*70.8%*	*70.1%*	*71.5%*	*75.2%*	*79.9%*
Net import (export)	-45	-51	-87	-106	-95	-80	-80	-80
Total apparent consumption	**679**	**746**	**736**	**698**	**676**	**679**	**685**	**693**
Apparent consumption growth	*4.5%*	*9.8%*	*-1.3%*	*-5.2%*	*-3.1%*	*0.4%*	*0.8%*	*1.1%*

Source: Deutsche Bank estimates

Figure 179: China steel capacity utilisation vs. net capacity and production



Source: Deutsche Bank estimates, NBS

Iron Ore: - An unhelpful price spike

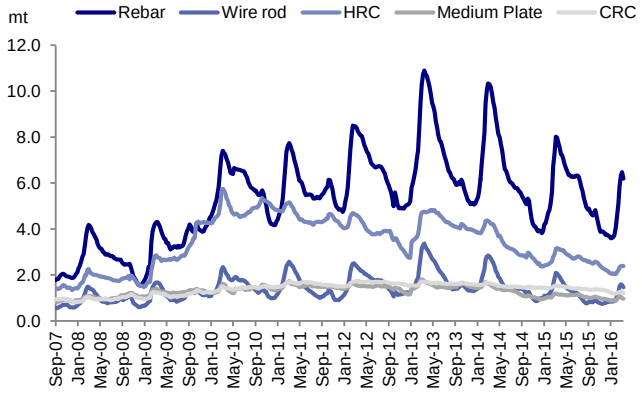
Samarco and the Q1 price spike have given the marginal producers some breathing space

The fact that iron ore prices have rallied since the December low of USD38/t and are on track to register a quarter on quarter increase is not totally surprising. Q1 is a weak period seasonally for supply due to a monsoon related disruptions in Brazil and Australia, and due to the cold weather in China, which makes mining too challenging for many of the smaller domestic producers. As a result, prices do tend to rally in Q1. Milder weather conditions at a time of sharply slowing steel consumption meant that the effects were hardly noticeable in 2014 and 2015. Throw in low steel inventories, a small post Chinese New year production ramp-up, a flush of liquidity in January, and let's not forget the Samarco supply shock of late last year which removed 30Mt from the market, it's no wonder that there was a squeeze.

Figure 180: Iron ore has rallied on the back of improving Chinese steel prices

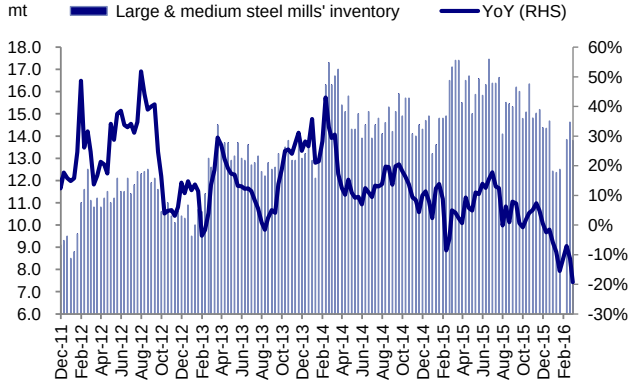
Source: Deutsche Bank, Bloomberg Finance LP

Figure 181: ...due to low Chinese steel inventories at the traders



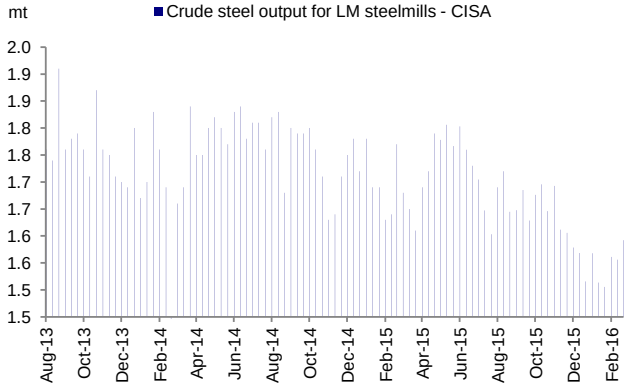
Source: Deutsche Bank, Wind, Mysteel

Figure 182: ..and the large and medium steel mills



Source: Deutsche Bank, CISA

Figure 183: Steel mills have ramped up production due to improving margins

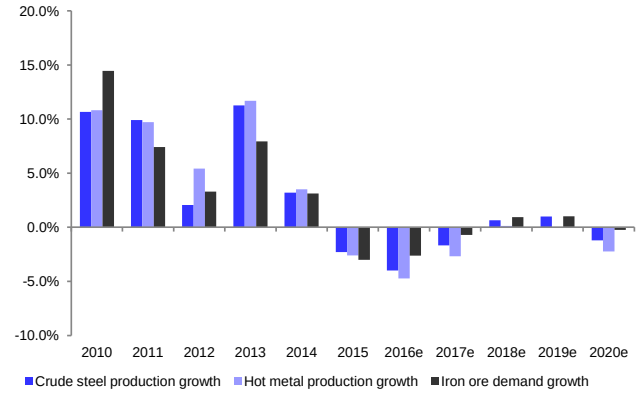


Source: Deutsche Bank, Bloomberg Finance LP

Increasing scrap supply in China dampens iron ore demand further

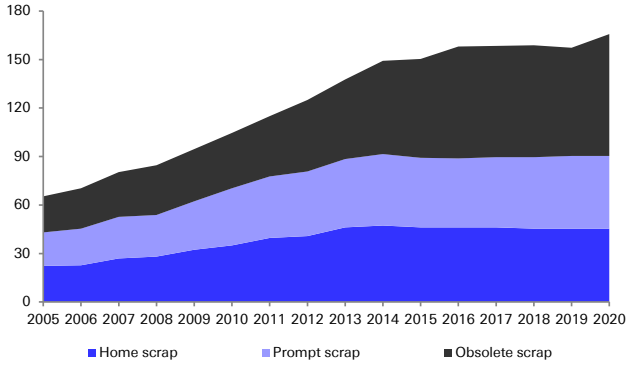
Our muted crude steel demand forecasts translate into weak iron ore demand over the next five years. We do expect an increase in Chinese scrap supply as the steel cycle in China matures, which further dampens the outlook for iron ore demand. The net result is that we forecast iron ore demand to be down c.50Mt by the end of the decade at roughly two billion tonnes. Wood Mackenzie estimates that there is c.160Mt of scrap available in China.

Figure 184: Contrasting crude steel and iron ore demand growth



Source: Deutsche Bank, Wood Mackenzie

Figure 185: Chinese domestic scrap availability



Source: Wood Mackenzie

The combination of Samarco and Roy Hill makes 2017 a tough year

The key question is whether a price over USD60/t, or even over USD50/t is sustainable for 2016? Unlikely in our view. Whilst the market may look tighter over the near-term, the fundamentals of iron ore have not changed that dramatically. One the restocking rally is over and liquidity dries up, we forecast Chinese steel demand to contract by a further 3% this year. Teething problems notwithstanding, the continued ramp-up of new projects from the major producers Vale, BHPB and Rio, as well as Roy Hill through the course of 2016 and 2017 will continue to apply pressure onto the mid tier miners, some of whom need to shut in order for a balanced market to prevail. This will only happen at prices in the low USD40's in our view. The recent rally will however have given some of the marginal producers some hope, and may have strengthened their resolve to hang on for longer.

In light of our lower demand growth expectations, we have reviewed our momentum supply demand balance in order to assess the extent of the oversupply over the next three years. We forecast a decline of c.50Mt over the next three years, with 2016 and 2017E being negative. The additional tonnage from the large Brazilian and Australian producers as well as select large projects over the next four years is forecast to be c.260Mt. The excess supply would amount to c.260Mt before cuts. Chinese domestic production is forecast to decline by a further c.80Mt to an equilibrium level of 200Mt. We forecast the non-traditional suppliers to decline by c.70Mt over the three year period to 2018E.

Indian production is expected to recover to the tune of 30Mt, lagging behind steel output. We expect India to remain a net importer of iron ore as Indian shippers now face competing in the seaborne iron ore market. Given the challenges that competition and cost pressures have intensified and the iron ore majors are now supplying sinter fines to China at a breakeven price at or

below $30/t CFR, a level at which Goan producers of low-grade fines will find impossible to match given their smaller scale, lower grade. In the latest budget, announced on the 29th of February, export taxes for low-grade ore (lumps and fines <58% Fe) have already been cut from 10% to 0% in an attempt to improve competitiveness.

Perhaps the biggest change to our forecasts has been the early return of Samarco versus our expectations. We forecast the Vale – BHPB JV coming back in 2017, utilizing some of the redundant pits for tailings disposal in the interim until a permanent solution is found.

This still leaves c.130Mt of excess supply, which needs to come from the higher cost mid-tier producers in Australia and Brazil. In our supply-demand model, we assume at least half of the mid-tier supply is cut, which is why we do not have show surpluses.

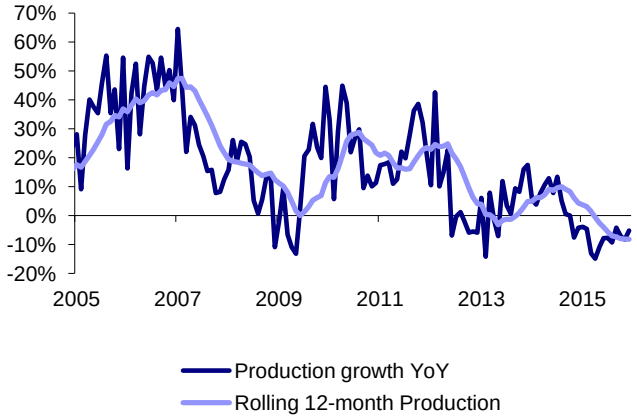
Figure 186: Cataloguing the required cuts

Mtpa	2016E	2017E	2018E	Cumulative	Comments	Risk
Demand growth	**-53**	**-14**	**18**	**-49**	Upside risks to 2016 should the credit cycle surprise on the upside. Downside risks later on in the decade	Neutral
Vale	14	**27**	19	60	The extent to which the S11d project turns out to be repalcement tonnages as opposed to new tonnes ads soem uncertainty	Neutral
Rio	22	14	7	43	Auto haul teething propblems may slow the ramp-up	Neutral
BHPB	19	17	8	44	Project plans on track	Neutral
FMG	1	4	0	5	Good work on processing and recoveries have lowered break-eve costs closer to USD34/t	-ve
Minas Rio (Anglo)	9	3	2	14	Slower than previously forecast ramp-up due to licensing hold-ups	Neutral
Roy Hill (Hancock)	**19**	**25**	**7**	51	A slower than expected ramp-up has been factored in	-ve
Big project supply growth	84	89	43	215		
Excess supply	137	103	24	**264**		
China domestic	-50	-30	0	-80	Sticky supply and cost cuts could see the equilibrium output higher than expected	-ve
India	10	10	11	31	to permitting delays, but an export tax cut may prove more of an incentive.	-ve
Non-traditional producers	-45	-25	-4	-74	Favourable currencies such as the Rouble have provided a significant tailwind	-ve
South Africa	-9	1	1	-6	Redesign of the Sishen pit shell	+ve
Samarco	-22	14	8	0	The operation could come back more quickly than we have assumed.	-ve
Excess supply	**20**	**73**	**40**	**134**		

Source: Deutsche Bank

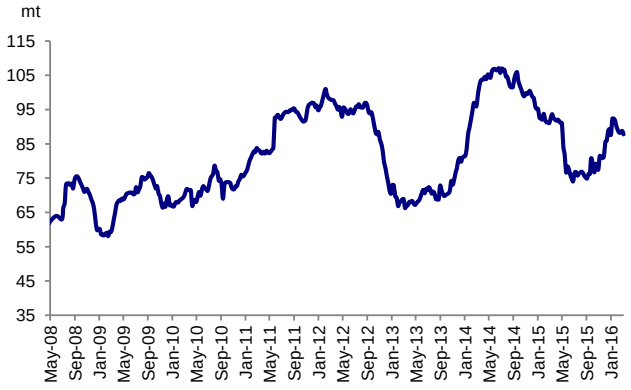
According to official stats, Chinese production was down 8% in 2015. We estimate that the 62% equivalent output was even lower at 280Mtpa due to grade decline. After rising toward the end last year, Chinese iron ore port stocks have declined below 90Mt once more.

Figure 187: Chinese domestic iron ore production – year on year comparison



Source: Deutsche Bank, NBS

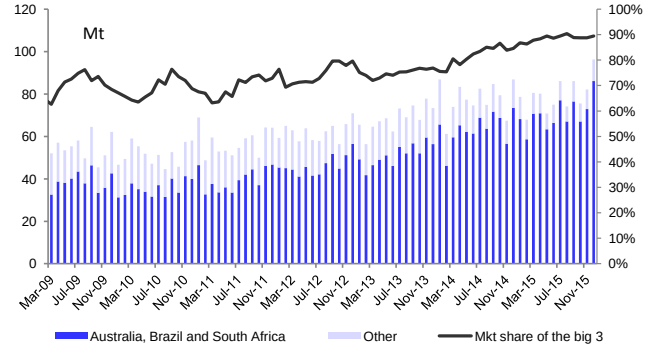
Figure 188: China iron ore port stocks have stabilized once more



Source: Deutsche Bank, Antaike

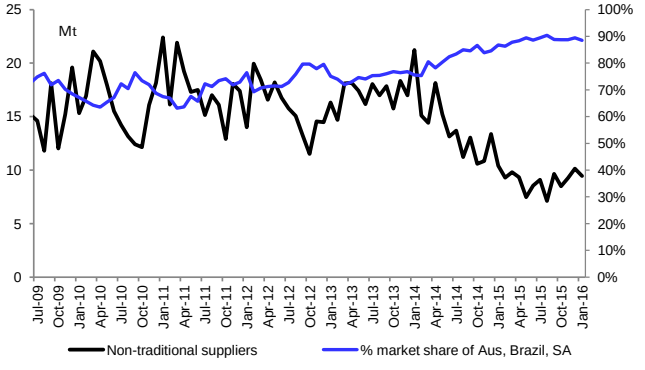
Exports of iron ore from the non-traditional suppliers, which we classify as everything except Brazil, Australia and South Africa have fell by 36% year to which amounts to a cut of 63Mt. We have, however, started to see some year-on-year increases from countries such as Russia, Ukraine and Peru, taking advantage of weak currencies. These may pose some downside risks to our full-year forecasts. Although we suspect that ex African Minerals mine Tonkolili would have been restarted in any case, the recent price rally in iron ore has certainly given them a nudge. Local press in Sierra Leone have reported a resumption of operations at the Tonkolili mine, with an estimated 1Mt being shipped. The project is owned by the Shandong Iron and Steel Group (SISG) and has a production capacity of 20Mtpa of lumps and fines. In December 2014, the operation was put under care and maintenance by the previous owner African Minerals Limited, due to a shortage in working capital and disruption caused by the Ebola outbreak. In March 2015, African Minerals Limited went into administration and SISG gained control of the project in April 2015.

Figure 189: Chinese imports of iron ore from the non-traditional countries – making a small comeback



Source: Deutsche Bank, Bloomberg Finance LP

Figure 190: Chinese iron ore imports – the market share of Aus, Brazil and SA has stabilized

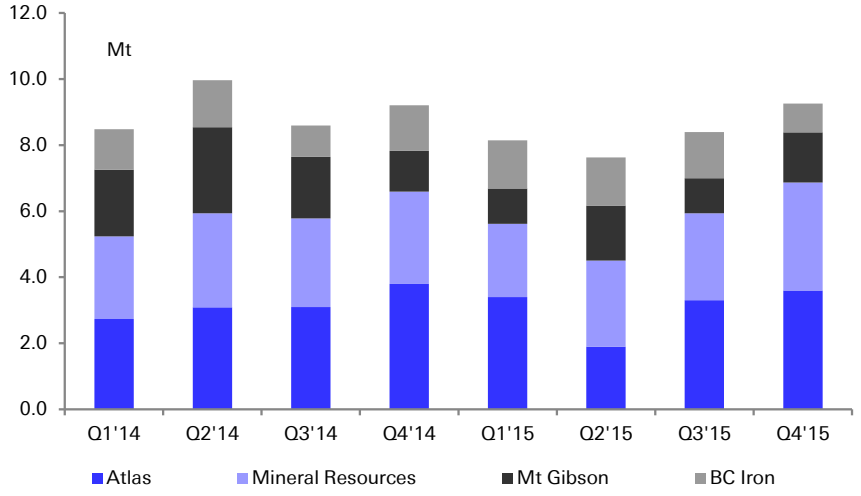


Source: Deutsche Bank, Bloomberg Finance LP

The mid tier iron ore producers are staging a real fight back and are delivering significant cost savings. Our sample shown in the chart below delivered a 10% increase in volumes with contributions by Atlas, Mineral Resources and Mt Gibson.

- CITIC reported that processing lines three and four began production at the 24Mtpa capacity Sino Iron project in Western Australia in the December Quarter of 2015. Construction of the final two lines, five and six, is expected to be completed on schedule, with commissioning to begin in the first half of 2016.
- BC Iron Limited (BCI) released its updated capital and operating costs for the Buckland project in the West Pilbara, Australia.. BCI has re-assessed mine cash cost (excluding royalties) at A$31.6/wmt (US$22/wmt) down from the previous estimate of A$41.7/wmt (US$29/wmt). The opex reduction was in large part due to a 50% reduction in truck haulage costs to A$7.9/wmt (US$5.5/wmt). Capital cost was reduced from A$997m (US$700m) to A$942m (US$660) through negotiation with contractors and suppliers.
- Grange Resources full-year pellet production of 2.5Mt, with an average product price of A$87.23/t (US$63.05/t). Average cash cost of production (excluding royalties) was A$77.18/t (US$55.79/t) down 11% from 2014. Construction of the South Deposit tailings storage facility continued. This is expected to provide sufficient storage for the remaining mine life and for treatment of legacy issues from previous operations.
- Atlas Iron exports from the company's three Pilbara operations in Western Australia were 6.9Mwmt for H2'15 (the company's H1'16 financial half). This was also the production level achieved in H1 FY 2015 before the temporary closure of the operations in April and May 2015. Realised iron ore price for H1 2016 was A$59.07/dmt (US$42.60/dmt) CFR. Full cash cost was A$55.75/wmt (US$40.29/wmt) CFR or around US$40.47/dmt CFR at 4.5% moisture which includes royalties, freight, C&A, interest, contractors profit share and sustaining capital. The company stated that it is on track to export 14–15Mt in FY 2016.
- Mineral Resources EBITDA of A$43m was ahead of our equity analyst Paul Young's forecast of A$38m with higher costs (A$339m vs. our A$323m) more than offset by higher revenue (A$381m vs. A$361m). MIN achieved a realised price of A$64.5/wmt during the half, higher than our A$63/wmt forecast. All-in unit costs of A$57.2/t were achieved (excluding sustaining capex), which was slightly above our A$55.2/wmt estimate. Management stated mining costs have fallen further from A$57.2/wmt in the Dec H and are now around A$53.6/wmt. The target is a reduction to below A$44/wmt. MIN are targeting a reduction of A$5/t at Iron Valley from mid year by increasing the size of the haul trucks from 100t to 140t, and a A$8-10/t reduction at Carina from swinging exports from the Kwinana port to Esperance.

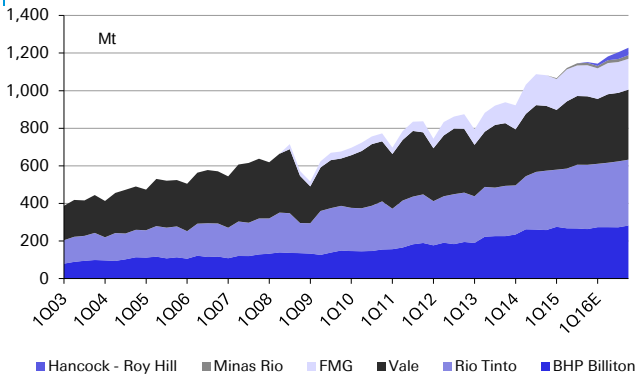
Figure 191: Mid tier Australian production performance



Source: Deutsche Bank, Company reports

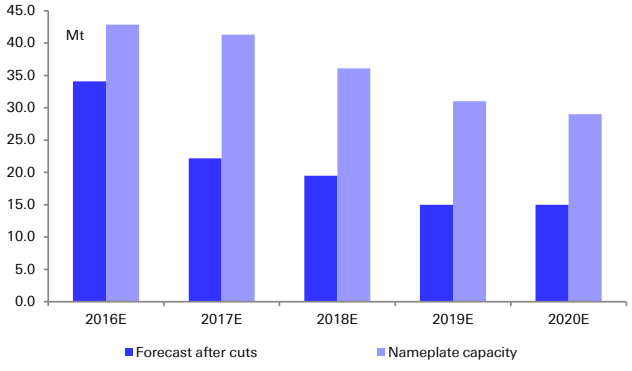
The four major iron ore producers had a strong Q4. We expect a small seasonal dip in Q1, but for production momentum to pick up from there. The Pilbara shipped 86Mt of iron ore in the Dec Q (equating to a run-rate of 346Mtpa), taking global shipments to 337Mt for 2015. This result was a touch softer than our 90.3Mt estimate. Rio expects to ship 350Mt of iron ore in 2016, which we think is split; 18Mt from IOC and 332Mt from the Pilbara. Guidance provided in Nov 2015 for the Pilbara was for 335Mt production in 2016. The last of the spare stockpiles was exhausted during the Dec Q which implies sales should match production closely in 2016. BHPB's iron ore production declined by 4% QoQ in December due to a train derailment and power disruptions at the port. BHP must peddle hard and produce at a 2H run-rate of 280Mtpa to hit FY16 guidance of 270Mt. The volume momentum is however not quite as strong in 2016E, as it was in 2015 for the big four, but we do expect Roy Hill and Minas Rio to begin ramping up in earnest from Q2'16 onwards, which will continue the supply momentum from Australia.

Figure 192: Volume increases from the big four, Hancock and Minas Rio- annualized tonnages



Source: Deutsche Bank, Company reports

Figure 193: Mid tier Australian output forecasts versus capacity

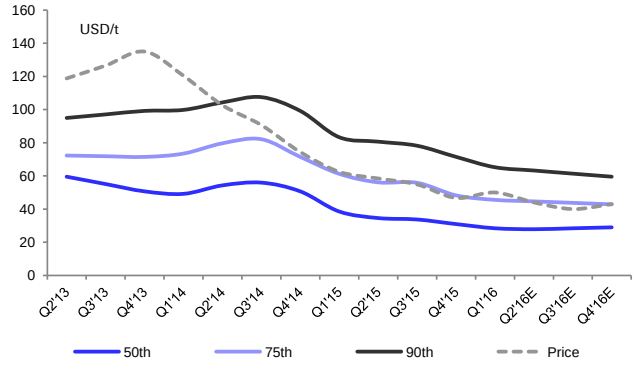


Source: Deutsche Bank, Company reports

Cost continue to ease lower

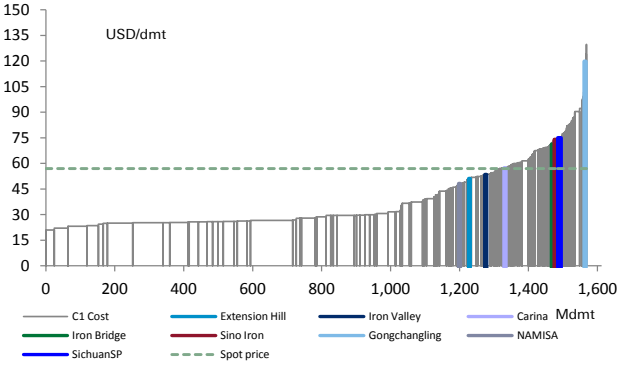
The average cost of North China delivered iron ore is USD37/dmt (62% Fe), USD2.7/dmt less than our Q4 2015 estimate. Costs have continued to fall due to lower freight rates, further mine-site cost cuts and the closure of high cost Chinese mines. Brazilian output averaged a delivered cash costs (62% Fe basis) dropped from USD29.0/t in Q4 2015 to USD28.1/t in Q1 2016, while Australian average delivered cash costs (62% Fe basis) dropped from USD31.8/t to USD29.5/t during the same time period. With further closure of high cost mines, China's total cash cost (ex-mine) dropped from USD62.1/t to USD59.7/t. Although we expect costs to continue falling through the course of the year, we expect the rate to decelerate. The curve is likely to continue flattening as more high cost producers close, but oil and energy input deflation is likely to slow in line with our rising oil price forecast. Our forecasts for 2016 are based around our expectations of where the 75th percentile of the cost curve is likely to move to.

Figure 194: Costs continue to fall across the cost curve



Source: Deutsche Bank, Wood Mackenzie

Figure 195: Iron ore cost curve 62% delivered to North China with high cost mid-tier operations highlighted



Source: Deutsche Bank, Wood Mackenzie

Cutting our long term iron ore price to USD57/t

In light of the lower unit cash costs and capex which we think is in part sustainable, very limited demand growth, and the excess logistics infrastructure in both Brazil and Australia, we have reviewed our long-term iron ore price assumption. We have used a combination of incentive pricing and marginal cost pricing to set our long term iron ore price. The long-term iron ore price will be set by a combination of the following:

- The marginal cost of the Australian, Brazilian and Canadian mid tier producers. In this case we have used Atlas Iron ore as a producer that is just about hanging on. Atlas reported a break-even cost of AUD56/t which equates to USD41/t. Adjusting for a slightly stronger AUD of 0.75, a higher oil at price at USD55/bbl, higher strip ratios and slightly lower grades, and price related royalties we derive a marginal cost of USD54/t. There is however a very important caveat to our estimate which is the long term assumption for the AUD. We outline the sensitivities below:

Figure 196: Australian marginal cost sensitivity to the AUD

AUD	Australian marginal cost
0.80	58
0.75	54
0.70	50
0.65	47
0.60	43

Source: Deutsche Bank

- The marginal cost of some of the Chinese mine sample is c.USD70/t, with the average just above USD60/t. We assume cost deflation in each of the main components of between 10 – 40%, expect for energy which we assume increases by 10%. At an RMB of 7 to the USD, the adjusted marginal cost is USD55/t. There is however a currency sensitivity which we outline in the table below:

Figure 197: Estimated the future marginal cost of Chinese production

Components	Cost cuts	RMB/t	RMB	USD/t
Labour	-20%	64.0	6.35	60.2
Maintenance	-20%	71.1	6.5	58.8
Energy	10%	97.8	7.0	54.6
Consumables	-10%	112.0	7.5	51.0
Duties and Levies	-40%	37.3		
Total		**382.3**		

Source: Deutsche Bank

- Vale has 4 large Itabiritos projects, Fabrica, Jangada, Mariana and ITM S Pico on hold amounting to 95Mt. We have modeled these projects as a group, and estimate that an iron ore price of USD63/t is required to earn a 12% IRR on the estimated USD6.2bn of capex. This is based on a BRL of 3.5 to the USD.
- There is excess rail and port capacity in Australia. Hence to expand capacity at Rio for instance it is only the marginal capex on the mine that is required. We model the Silvergrass and Koodaideri projects which could add 60mt of capacity at USD40 – 50/t. We estimate a price of USD44/t is required to achieve an IRR of 15%.
- Over the longer term, there will be grade decline and resource depletion. At some point, possible by the middle of the next decade, new Greenfield mines will be required with dedicated port and rail infrastructure. We model a Greenfield project in the Pilbara and Simandou at a capex intensity of USD135/t. The average incentive price required is USD86.5//t.

Given that new infrastructure is a long way off, we have given the Greenfield incentive price a much lower weighting of 10%, and so we have cut our long-term iron ore price from USD66/t to USD57/t.

Figure 198: Deriving the long-term iron ore price

Method	Category	USD/t	Weighting
Incentive	Greenfield	86.5	10%
Incentive	Pilbara mine development	44.3	22.5%
Incentive	Vale Itabiritos	63.0	22.5%
Marginal	China	54.6	22.5%
Marginal	Australian, Canadian & Brazilian Mid tier	54.0	22.5%
	Long-term price	**57.2**	

Source: Deutsche Bank

Figure 199: Deutsche Bank Iron Ore supply – demand model

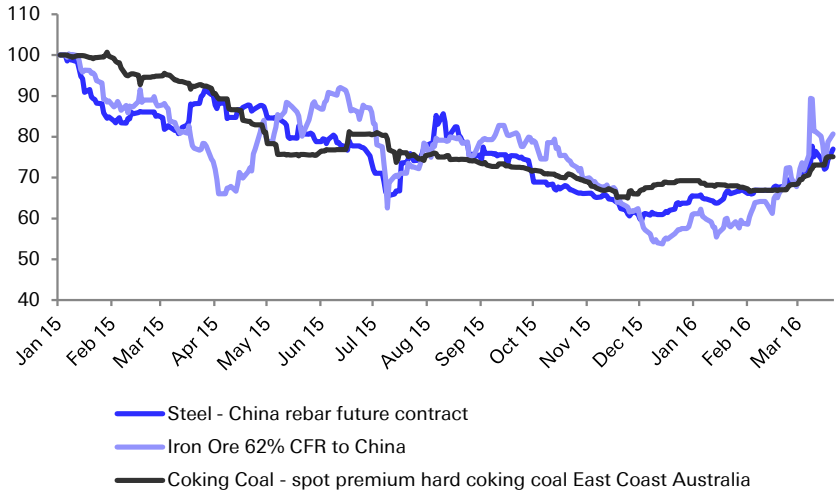
Supply		2009	2010	2011	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Brazil	Mt	301	360	378	372	373	389	398	417	457	486	523	518
growth	%	*-9%*	*19%*	*5%*	*-2%*	*0%*	*4%*	*2%*	*5%*	*9%*	*6%*	*7%*	*-1%*
Australia	Mt	393	433	477	529	622	750	812	861	911	930	928	922
growth	%	*14%*	*10%*	*10%*	*11%*	*18%*	*21%*	*8%*	*6%*	*6%*	*2%*	*0%*	*-1%*
South Africa	Mt	55	58	58	61	67	73	69	61	62	63	62	60
growth	%	*17%*	*4%*	*0%*	*6%*	*10%*	*8%*	*-5%*	*-12%*	*1%*	*2%*	*-2%*	*-2%*
India	Mt	210	203	180	140	148	128	136	146	156	167	173	179
growth	%	*9%*	*-3%*	*-12%*	*-22%*	*6%*	*-14%*	*6%*	*7%*	*7%*	*7%*	*4%*	*3%*
China	Mt	242	330	362	326	425	361	280	230	200	200	180	180
growth	%	*-20%*	*37%*	*10%*	*-10%*	*30%*	*-15%*	*-22%*	*-18%*	*-13%*	*0%*	*-10%*	*0%*
CIS incl. Russia	Mt	174	200	209	208	208	204	198	190	183	180	183	187
growth	%	*-5%*	*15%*	*4%*	*-1%*	*0%*	*-2%*	*-3%*	*-4%*	*-4%*	*-2%*	*2%*	*2%*
North America	Mt	64	91	101	104	116	108	99	84	76	74	74	73
growth	%	*-30%*	*42%*	*11%*	*4%*	*11%*	*-7%*	*-8%*	*-15%*	*-10%*	*-1%*	*-1%*	*-1%*
West Africa	Mt	10	12	14	21	34	37	18	12	10	10	10	10
growth	%	*-9%*	*14%*	*19%*	*55%*	*60%*	*9%*	*-52%*	*-32%*	*-20%*	*0%*	*0%*	*-3%*
Other regions & adjustments	Mt	29	28	34	134	46	68	41	19	-12	-32	-44	-50
Total iron ore supply	**Mt**	**1,477**	**1,714**	**1,813**	**1,895**	**2,040**	**2,117**	**2,050**	**2,020**	**2,042**	**2,078**	**2,088**	**2,079**
growth	%	*-3.4%*	*16.0%*	*5.8%*	*4.5%*	*7.6%*	*3.8%*	*-3.2%*	*-1.5%*	*1.1%*	*1.7%*	*0.5%*	*-0.4%*
Demand		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016e**	**2017e**	**2018e**	**2019e**	**2020e**
Global steel production (crude steel)	Mt	1,235	1,430	1,534	1,543	1,626	1,660	1,629	1,613	1,619	1,641	1,667	1,675
Global Hot Metal production	Mt	1,005	1,125	1,200	1,245	1,334	1,372	1,345	1,311	1,303	1,317	1,330	1,327
growth	%	2.0%	11.9%	6.7%	3.8%	7.1%	2.8%	-2.0%	-2.5%	-0.6%	1.0%	1.0%	-0.2%
% Non scrap production	%	81%	79%	78%	81%	82%	83%	83%	81%	80%	80%	80%	79%
European crude steel production	Mt	168	206	217	209	206	205	206	208	209	211	212	213
European Hot metal production	Mt	103	106	104	105	106	106	110	108	108	109	109	110
growth	%	16%	3%	-2%	1%	1%	0%	4%	-3%	0%	1%	0%	0%
% Non scrap production	%	61%	51%	48%	50%	51%	52%	54%	52%	52%	52%	51%	51%
Japan crude steel production	Mt	88	110	108	107	111	105	105	104	104	103	103	102
Japan hot metal production	Mt	67	82	81	81	84	84	81	80	80	80	79	79
growth	%	-22.3%	22.9%	-1.5%	0.5%	3.0%	0.0%	-3.5%	-1.0%	0.0%	-0.5%	-0.5%	-0.5%
% Non scrap production	%	77%	75%	75%	76%	76%	80%	77%	77%	77%	77%	77%	77%
India crude steel production	Mt	64	69	74	78	81	87	91	99	109	117	127	137
India hot metal production	Mt	60	63	66	68	69	72	74	81	89	96	104	112
growth	%	3.0%	4.5%	4.2%	3.7%	1.6%	4.8%	2.2%	9.8%	9.7%	7.4%	8.1%	8.1%
% Non scrap production	%	95%	91%	89%	88%	85%	83%	82%	82%	82%	82%	82%	82%
China steel prodution (crude steel)	Mt	577	639	702	717	797	823	804	772	759	764	771	762
China steel production (iron ore)	**Mt**	**553**	**613**	**672**	**709**	**792**	**819**	**798**	**760**	**740**	**741**	**740**	**724**
growth	%	15.6%	10.8%	9.7%	5.4%	11.7%	3.5%	-2.6%	-4.7%	-2.7%	0.1%	0.0%	-2.2%
% Non scrap production	%	*96%*	*96%*	*96%*	*99%*	*99%*	*100%*	*99%*	*99%*	*98%*	*97%*	*96%*	*95%*
Iron Ore													
China	Mt	831	923	1024	1077	1217	1260	1214	1156	1125	1126	1125	1099
growth	%	*15%*	*11%*	*11%*	*5%*	*13%*	*4%*	*-4%*	*-5%*	*-3%*	*0%*	*0%*	*-2%*
Japan	Mt	102	125	124	124	127	127	122	121	120	119	119	118
growth	%	*-22%*	*23%*	*-1%*	*0%*	*3%*	*-1%*	*-4%*	*-1%*	*0%*	*-1%*	*-1%*	*-1%*
S. Korea & Taiwan & other	Mt	65	81	95	92	94	106	109	108	109	111	112	113
growth	%	*-13%*	*25%*	*18%*	*-4%*	*3%*	*13%*	*3%*	*0%*	*1%*	*2%*	*1%*	*1%*
Europe	Mt	119	153	153	149	153	157	156	152	152	153	154	155
growth	%	*-30%*	*29%*	*0%*	*-3%*	*3%*	*2%*	*0%*	*-3%*	*0%*	*1%*	*0%*	*0%*
India	Mt	92	97	100	104	105	110	112	123	135	144	156	168
growth	%	*3%*	*5%*	*4%*	*3%*	*1%*	*5%*	*2%*	*9%*	*9%*	*7%*	*8%*	*8%*
Brazil	Mt	35	43	46	45	44	44	45	45	45	46	48	49
growth	%	*-28%*	*22%*	*7%*	*-3%*	*-3%*	*1%*	*1%*	*0%*	*0%*	*2%*	*4%*	*4%*
CIS	Mt	125	135	138	141	141	138	127	126	128	130	132	134
growth	%	*-11%*	*7%*	*3%*	*2%*	*0%*	*-2%*	*-8%*	*-1%*	*1%*	*1%*	*2%*	*1%*
Total iron ore demand	**Mt**	**1,486**	**1,701**	**1,827**	**1,887**	**2,037**	**2,100**	**2,037**	**1,984**	**1,970**	**1,988**	**2,008**	**2,003**
growth	%	*-2.9%*	*14.4%*	*7.4%*	*3.3%*	*7.9%*	*3.1%*	*-3.0%*	*-2.6%*	*-0.7%*	*0.9%*	*1.0%*	*-0.2%*
Implied scrap ratio	%	*25%*	*26%*	*26%*	*24%*	*22%*	*21%*	*22%*	*23%*	*24%*	*24%*	*25%*	*25%*
Disruption allowance	*Mt*												
Notional market balance	**Mt**	**-9**	**13**	**-14**	**8**	**3**	**17**	**13**	**36**	**73**	**89**	**80**	**76**
China imported fines (62% CFR)	**USD/t**	**79.8**	**146.6**	**167.0**	**123.8**	**130.0**	**97.0**	**55.6**	**44.3**	**45.8**	**49.1**	**52.4**	**55.7**

Source: Deutsche Bank, Wood Mackenzie

Metallurgical Coal: Looking for stabilization in 2016, but a recovery in 2017 depends on China capacity constraint

We continue to see the Coking coal market as good gauge for the true demand in the steel making materials. In this case there is an order of magnitude in terms of futures contracts traded on the SGX and Dalian exchanges versus iron ore. The fact that spot prices have recovered from a touch under USD75/t to USD84/t does point to a tighter market. However, the fact that the spot Met coal price has underperformed does suggest more speculation in Steel and iron ore. We would however point out that that in previous iron ore price rallies, metallurgical coal prices have not reacted.

Figure 200: Steel making materials prices rebased to 100 beginning 2015



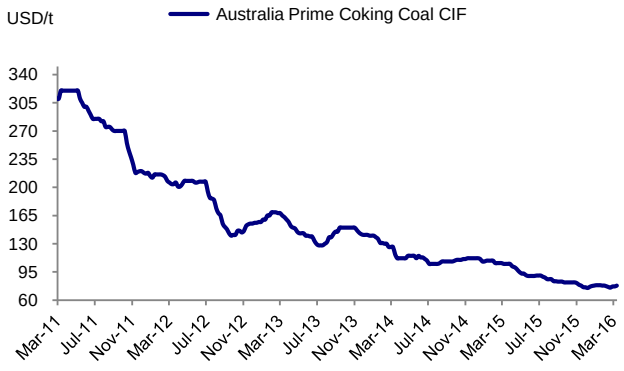
Source: Deutsche Bank, Bloomberg Finance LP

Given that the spot price increases have occurred during the period of quarterly contract negotiations, we are more confident that our Q2 forecast of USD83/t will not be too far off the mark. Furthermore, we would expect Anglo American who have recently put their Metallurgical coal assets up for sale as part of their debt reduction programme, will be driving a hard bargain in the negotiations where they have taken a lead role over the past three years.

Figure 201: China domestic coking coal price (Liulin No.4 FOR)

Source: Sxcoal, Deutsche Bank

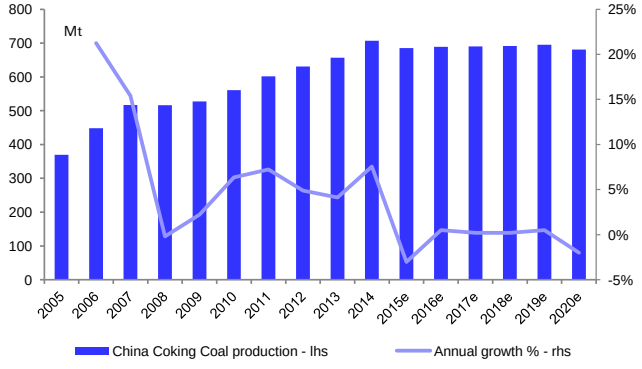
Figure 202: Australian prime coking coal CIF China



Source: Thomson Reuters Datastream, Deutsche Bank

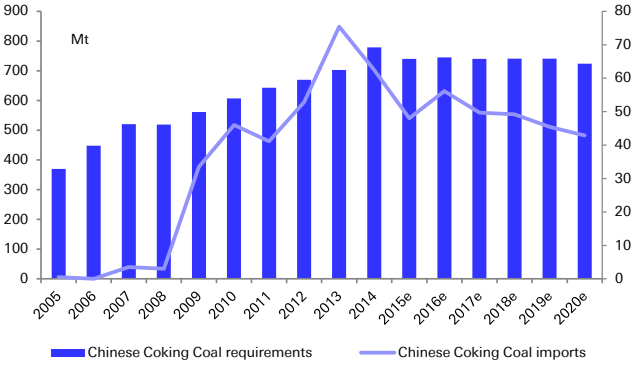
We continue to see the seaborne Met coal market as fundamentally over-supplied, and continue to think that further supply cuts are required. Chinese domestic producers are also struggling with negative cashflows, estimated at –USD10bn at spot prices, and although we remain skeptical on implementation, the tone in cutting overcapacity in the Chinese coal sector is positive. As a result, we would expect limited domestic production growth over the next five years. This is key for the seaborne coking coal market in limiting the decline of Coking coal imports, especially in light of domestic steel demand declining over the next five years. An increase in Indian imports and elsewhere should result in modest seaborne demand growth over the next few years. Metallurgical coal imports into India in 2015 were at up 4.6Mt to c.48Mt, but we expect the imports increase to be much lower in 2016 at 1.4Mt.

Figure 203: Chinese coking coal production is forecast to flatten



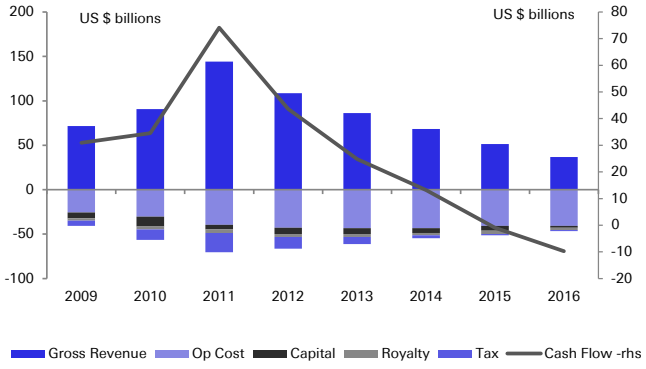
Source: Deutsche Bank, Wood Mackenzie

Figure 204: …but Chinese coking coal imports are likley to ease lower.



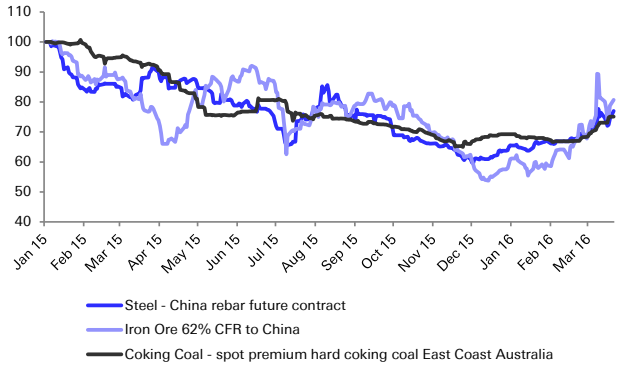
Source: Deutsche Bank, Wood Mackenzie

Figure 205:-Chinese Met coal sector cashflows



Source: Wood Mackenzie,

Figure 206: Rising Indian coking coal imports is dependent on



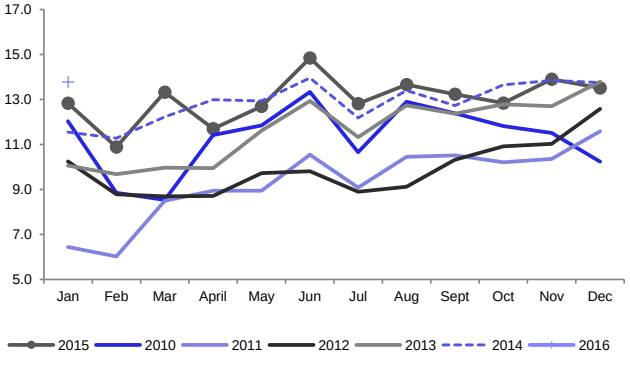
Source: Deutsche Bank, Wood Mackenzie, McKloskey

Supply constraint is still required

We are forecasting limited seaborne supply growth of c.1% over the next three years after a 1% decline in 2015. Production cuts from US producers are expected to reach 10Mt in 2016 versus 2014 with large cuts coming from Alpha natural resources (4.1Mt), Virginia Conservation Legacy Fund- VCLF (2.9Mt) and Walter (1.4Mt). Alpha cuts include Kingston, Elk Run, Marfork complexes and they will be closed by late March. Marfork operations produce some of the best quality coal in the US. Complexes of VCLF that were closed include the recently acquired operations of Alabama, Pinnacle, Oak Grove and Maple mines.

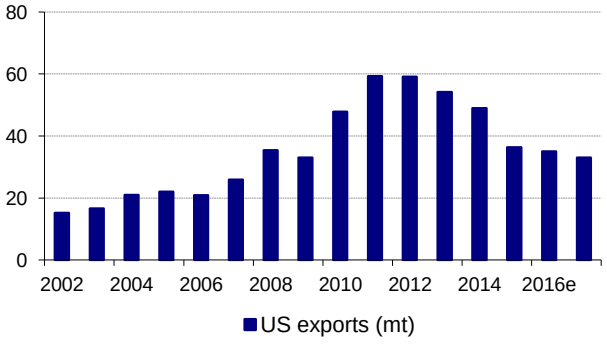
Australian production is expected to have a strong year, and this was reflected in the January 2016 exports (13.8Mt) from Queensland increased by nearly 1 Mt year on year, as Hay point shipped at an all time high record of 4.6Mt from previous record of 4.4Mt shipped in December 2015.

Figure 207: Queensland Metallurgical coal exports (Mt)



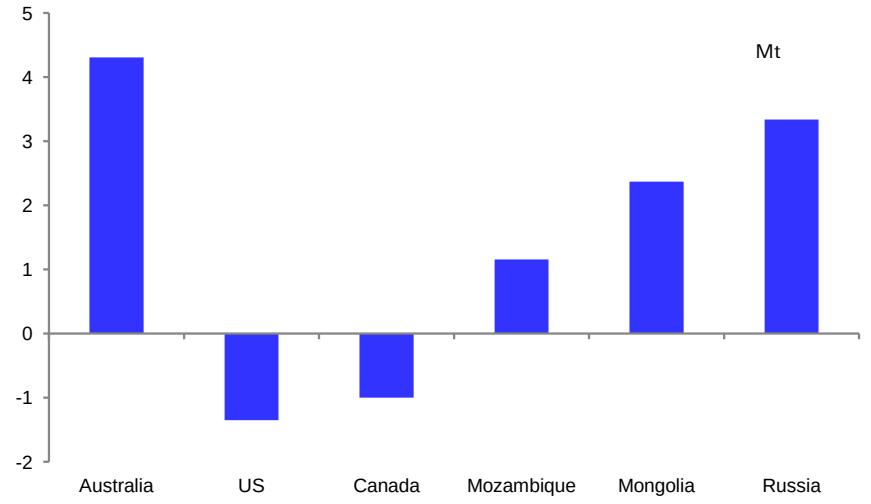
Source: Wood Mackenzie, Deutsche Bank

Figure 208: US exports fell sharply in 2015



Source: Deutsche Bank, McKloskey, Wood Maceknzie

Figure 209: Regional supply changes to the seaborne market: 2015 to 2016.

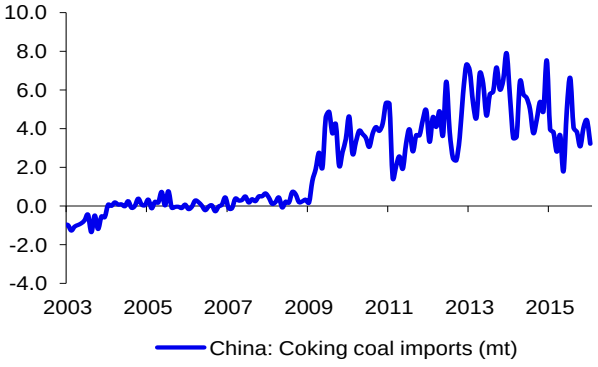


Source: Deutsche Bank

Imports continue to fall, and coke exports have started to increase once more

Chinese Coking coal imports continued to be weak in January, down 16% year on year and down c.24% month on month. Coke exports in January 2016 did however fall from an all time high in December last year. January exports were down 31% and 49% Y-o-Y and M-o-M respectively.

Figure 210: Chinese Coking Coal imports (monthly)



Source: NBS, Deutsche Bank

Figure 211: Chinese Coke exports

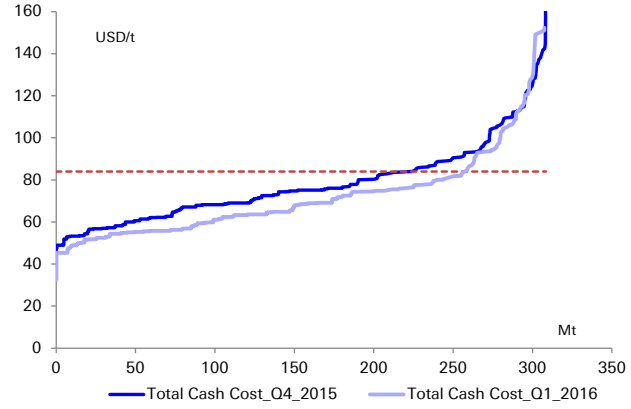
Source: NBS, Deutsche Bank

A quarter of the industry is still loss making, despite cost cuts and the recent rally

We estimate that nearly a quarter of the coking coal seaborne export market is loss-making at the current spot price of USD84/t. The average total cost of seaborne export metallurgical coal operation has come down by USD6/t from Q4 2015 to Q1 2016. Australian operations have cut their costs by USD7/t during the same period, whilst the Canadian average has come down the most by USD 14/t. in Q1 2016 as closures of high cost operations such as Wolverine, Perry Creek, Grande Cache Surface etc materialized. Weaker oil prices and currency deflation have been a strong tailwind in the reduction of cash costs along with the cost cutting steps taken by the management. The tailwinds have however eased off so far during the first quarter, and given the recent Fed tone, we expect less pressure on the producer currencies. About 80% of

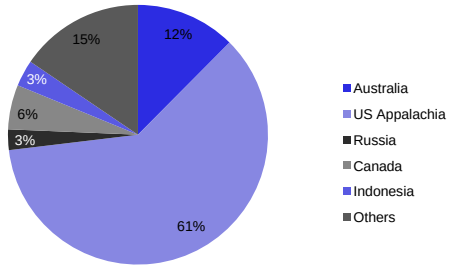
the US seaborne export production is loss-making at the current spot price of ($84/t), although many of these operations have closed or are in the process of closing.

Figure 212: Flattening of seaborne export cost curve in 2016



Source: Wood Mackenzie, Deutsche Bank

Figure 213: Proportion of loss making seaborne export capacity by region



Source: Wood Mackenzie, Deutsche Bank

Figure 214: Deutsche Bank Metallurgical Coal supply – demand balance

		2009	2010	2011	2012	2013	2014	2015	2016e	2017e	2018e	2019e
Australian exports	Mt	134	158	134	145	169	185	182	186	185	186	182
growth	%	*-2%*	*18%*	*-16%*	*9%*	*17%*	*10%*	*-2%*	*2%*	*-1%*	*1%*	*-2%*
Canadian exports	Mt	22	27	28	31	34	30	28	27	26	26	26
growth	%	*-18%*	*23%*	*2%*	*11%*	*12%*	*-11%*	*-9%*	*-4%*	*-4%*	*0%*	*0%*
US exports	Mt	33	48	59	59	54	49	36	35	33	32	31
growth	%	*-7%*	*45%*	*24%*	*0%*	*-8%*	*-10%*	*-26%*	*-4%*	*-6%*	*-3%*	*-3%*
China exports	Mt	4	5	8	7	6	1	1	1	1	1	1
growth	%	*-59%*	*39%*	*45%*	*-17%*	*-8%*	*-90%*	*71%*	*2%*	*2%*	*2%*	*2%*
Other supply	Mt	43	30	39	63	56	59	73	73	80	84	93
Disruption allowance			0	0	0	0	0	0	0	0	0	0
Global traded coking coal supply	**Mt**	**236**	**269**	**267**	**304**	**320**	**324**	**320**	**322**	**324**	**329**	**333**
growth	%	*1%*	*14%*	*-1%*	*14%*	*5%*	*1%*	*-1%*	*1%*	*1%*	*1%*	*1%*
Japanese imports	Mt	66	77	69	62	59	61	62	58	58	58	57
growth	%	*9%*	*17%*	*-11%*	*-9%*	*-6%*	*4%*	*2%*	*-6%*	*0%*	*-1%*	*-1%*
Korea & Taiwan imports	Mt	25	34	38	40	44	44	45	45	45	46	47
growth	%	*-23%*	*36%*	*13%*	*5%*	*11%*	*0%*	*1%*	*0%*	*1%*	*2%*	*1%*
European imports	Mt	46	52	53	49	52	52	54	54	54	54	54
growth	%	*-30%*	*14%*	*2%*	*-7%*	*5%*	*1%*	*4%*	*0%*	*0%*	*0%*	*0%*
China imports	Mt	34	47	45	53	75	62	48	56	50	49	45
growth	%	*912%*	*37%*	*-5%*	*18%*	*43%*	*-17%*	*-23%*	*17%*	*-12%*	*-1%*	*-8%*
India imports	Mt	31	34	34	36	41	44	48	50	54	58	62
growth	%	*17%*	*11%*	*-1%*	*7%*	*13%*	*6%*	*11%*	*3%*	*8%*	*7%*	*8%*
Brazil imports	Mt	11	14	13	15	16	16	16	16	16	16	17
growth	%	*-32%*	*20%*	*-4%*	*14%*	*9%*	*-3%*	*0%*	*1%*	*0%*	*2%*	*4%*
Other imports / inventory adjustment	Mt	12	20	24	31	20	32	36	36	38	39	41
Global traded coking coal demand	**Mt**	**221**	**274**	**271**	**295**	**316**	**321**	**319**	**322**	**322**	**328**	**332**
growth	%	*-4%*	*24%*	*-1%*	*9%*	*7%*	*1%*	*-1%*	*1%*	*0%*	*2%*	*1%*
Notional market balance	**Mt**	**15**	**-5**	**-4**	**9**	**3**	**3**	**0**	**1**	**2**	**1**	**1**
Contract Hard Coking Coal	**USD/t**	**129**	**195**	**289**	**210**	**159**	**126**	**102**	**84**	**88**	**98**	**108**

Source: McCloskey's, AME, Wood Mackenzie, CEIC, Deutsche Bank Research

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Energy

Crude Oil

The following section on Energy - Crude Oil and Thermal Coal – has been contributed by our commodities analyst:
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- We are confident that the process of rebalancing is indeed underway as softer revisions to the EIA drilling productivity report are offset by long-anticipated and emerging declines in non-OPEC, non-US regions where we believe two consecutive years of capex cutbacks must eventually cause current rates of production to suffer.
- Although the strength of the rally may fade as surpluses remain sizeable in Q2, the forward-looking nature of the market and narrowing surpluses beyond Q2 suggest a gradually improving outlook.
- Declines in China commercial crude oil stocks according to Reuters, the IEA estimate of a 231 mmbbl increase in crude oil storage capacity this year, and well-reported US data support our view that reaching capacity will not pose a threat of super-contango or steeply lower oil prices.
- Market strength notwithstanding we are skeptical of the role of OPEC discussions in placing a floor under the market not only because of the tepid proposal on the table but also because we believe an agreement will continue to be elusive. That said, the contrary argument could be that the very weakness of the shift from 'cut' to 'freeze' is itself an expression of confidence in improving fundamentals.
- Our US E&P team has put forth a medium-term US production scenario predicated on the current forward curve of -600/-485/-50 kb/d yoy in 2016-18. Fed into our model (and offset by OPEC NGL revisions) this continues to suggest the first consistent global inventory declines occurring in 2018. However inventories may arguably stabilize at a higher level than the five-year average owing to both growing demand and storage capacity.
- In the first signs that non-OPEC, non-US production may be struggling we have seen downgrades to the Kazakhstan government's production estimate from 1.55 mmb/d to 1.49 mmb/d for 2016, continuing a decline from the 2014 level of 1.62 mmb/d. Lower spending has resulted in reduced drilling and workover operations, limiting production at mature fields.
- Crude oil tanker supply is flashing "RED" for the market according to our shipping analysts. Newbuilding.orders are running in-line with the peak of the last 4 ordering cycles of the last 20 years, all of which directly preceded sharp and sustained declines in rates.
- Floating storage has apparently played a significant role in absorbing supply at price troughs (contango peaks) and driving fluctuations in tanker rates although subsequent withdrawals also return the surpluses to market. Strong vessel supply could mean that a relatively shallower contango slope in the forward curve can incentivize floating storage to the same degree.
- Recalibrating the baseline estimate of 2015 OPEC NGL production to actual figures by +130 kb/d raises the 2016 forecasts by extension.
- Iranian production has risen by 278 kb/d since Q4-2015 while loadings for export have increased by only 236 kb/d implying that floating storage has not been drawn upon to the extent expected.
- Growth in refined products supplied and refiner net input growth in the US are showing a divergence in predicting US demand this year. Historically

Figure 215: DB Oil Price Deck

	WTI (USD/bbl)	Brent (USD/bbl)
2015	49.19	54.19
Q1 2016F	33.00	33.00
Q2 2016F	40.00	42.00
Q3 2016F	43.00	45.00
Q4 2016F	47.00	50.00
2016F	40.75	42.50
2017F	52.00	55.00
2018F	65.00	70.00

Figures are period averages
Source: Deutsche Bank Research

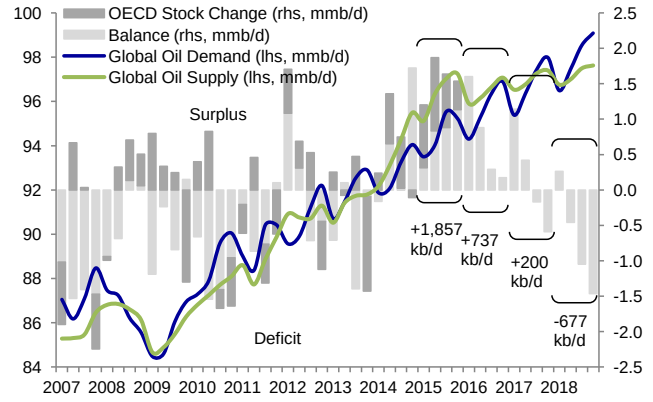
we find that refined products supplied shows a tighter fit with final oil demand, suggesting some downside risk to the 2016 US demand estimate.

Historical data revises 2015 balance

Recalibrating our model to include an upward revision to OPEC NGL production of +130 kb/d and H2-2015 OECD stock builds gives a revised annual surplus of 1.86 mmb/d in 2015 followed by +762 kb/d in 2016, +225 kb/d in 2017, and more speculatively, a -500 kb/d deficit in 2018 with US production held flat to the 2017 level. The 2015 balance now includes OECD inventory changes while 2016-18 balances reflect implied inventory changes.

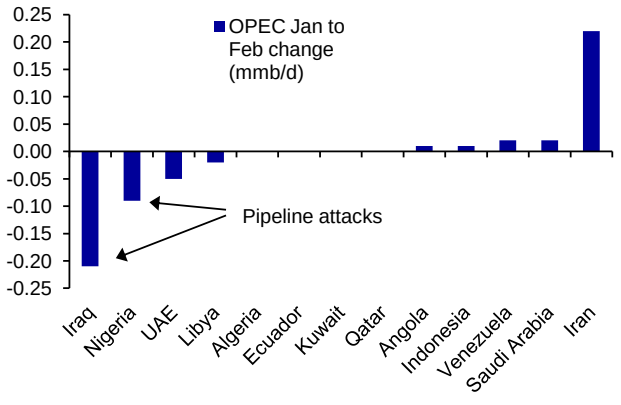
Our US E&P analysts have released a view of the likely US production profile based on an analysis of 30 corporates comprising 35% of US lower 48 liquids production. Extrapolating this analysis to the entire US lower 48 states, and in a price scenario representing the forward curve as it stands, they see annual declines in 2016-18 of -600/-485/-50 kb/d. In a scenario USD +15/bbl above this, they see US decline of -600 kb/d in 2016 followed by growth of +20/+640 k/bd in 2017-18. We believe this is consistent with our revised model inputs of -600/-100 kb/d in 2016-17 based on our 2017 price deck which stands USD +7/bbl above the market. However it implies significant upside to our US model input of flat production in 2018, and meaningful downside to our 2018 price target in an OPEC scenario of 33.1 mmb/d output.

Figure 216: Supply-demand balance summary (mmb/d)



Source: IEA, Deutsche Bank

Figure 217: : OPEC changes to production (mmb/d)



Source: IEA, Deutsche Bank

Cracks in the supply picture

We have seen some deterioration in the supply picture from two sources: (i) unplanned disruptions and (ii) the emergent impact of reduced spend in non-OPEC producing countries.

On the first topic, disruptions in Iraq and Nigeria have more than offset the increased volume so far from Iran. In Iraq, there was a 210 kb/d decline from 4.43 mmb/d to 4.22 mmb/d in February. This was due to a disruption on Iraq's northern pipeline, which has a capacity of 600 kb/d, in the middle of February. The pipeline from Kirkuk region to the Turkish port of Ceyhan was hit by sabotage sometime in February and then was restarted on March 11. However exports from Ceyhan in the week ending 13 March were still at zero, down from an average of 397 kb/d so far in 2016.

The second largest disruption was in Nigeria where production was down 90 kb/d from 1.87 mmb/d to 1.78 mmb/d. A leak in a 48-inch underwater pipeline appeared on February 14 according to Shell, which caused Shell to declare

force majeure on Forcados loadings on February 21 at 15:00. This was due to a suspected act of sabotage ("extensive damage consistent with the application of external force"). We believe the pipeline capacity is 300 kb/d and that the force majeure is still in place as of today. According to the Nigerian petroleum ministry, it could take up until May 2016 to complete repairs. However, the impact is mitigated to some degree by the fact that companies have alternative routes available through other pipelines.

Initial effects of reduced spending in non-OPEC producers

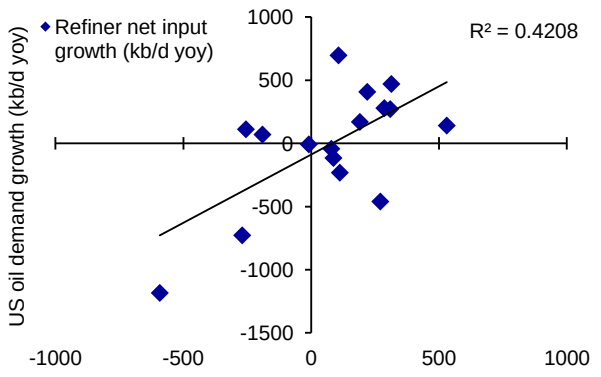
On the second topic, a USD 4bn cut to USD 36.3 bn for the 2015 Petroleos Mexicanos (Pemex) budget (-11.5% yoy) has been followed by a further USD 5.5bn cut this year which the government acknowledges is likely to result in a 100 kb/d fall in production owing to the age of the portfolio which requires continuing investment for various forms of enhanced oil recovery.

In Kazakhstan, the government now expects production to fall by 110 kb/d in 2016 to 1.54 mmb/d, down from 1.65 mmb/d in 2015 and 1.68 mmb/d in 2014. This is expected as a result of reduced spending on drilling and workover operations necessary to maintain production from mature fields such as Tengizchevroil area which is responsible for 36% of national production. The super giant field began production in 1991 and now has 59% of total reserves remaining to produce. According to Wood Mackenzie, high reservoir pressure and very sour gas present engineering challenges for the field. We note the restart of production from Kashagan will boost production from 21 kb/d to 146 kb/d in 2017 and 229 kb/d in 2018, offsetting the difficulty at Tengiz.

For the Former Soviet Union region combined, however, we hold our 2016 expectation unchanged as the Kazakh decline is offset by our expectation for an increase of 1% in Russian production which equates to +111 kb/d in total liquids output. Notably the 1% increase in Russian production would reflect downside from the peak January level which represented yoy production growth of 1.5%. Hence a production freeze by Russia would not practically pose any meaningful limit on its output for 2016.

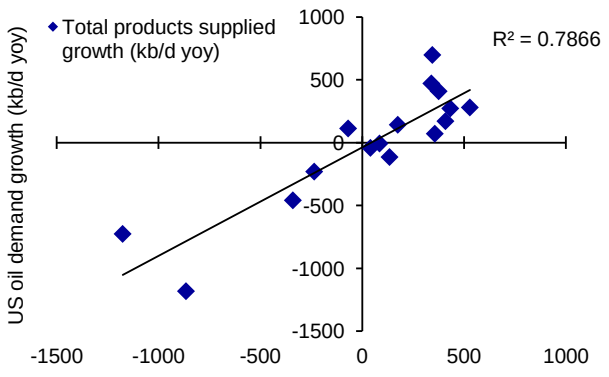
In Brazil, Petrobras has announced a 32% capex reduction for its 2015-19 plan from USD 98.4bn to 66.4bn, resulting in downward revision to production guidance to 2.145 mmb/d crude oil in 2016, down from 2.185 mmb/d expected previously for the year. This would still represent growth from 2015 production of 2.128 mmb/d. However, our E&P analysts observe that recently published well data for Brazil as a whole (*Brazil production monitor,* 14 March 2016) shows January production down -114 kb/d yoy crude oil this year (Petrobras represents 87% of national crude oil production of 2.436 mmb/d in 2015). While this may be a transitory effect from an opportunistic maintenance window for FPSOs, possible further cuts to capex may yet lower our expectations.

Figure 218: Refiner net inputs and US oil demand growth



Source: US EIA, Deutsche Bank

Figure 219: Product supplied and US oil demand growth

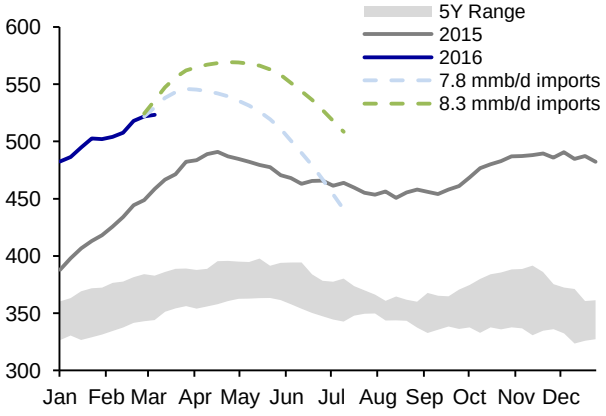


Source: US EIA, Deutsche Bank

Differing implication of US demand measures

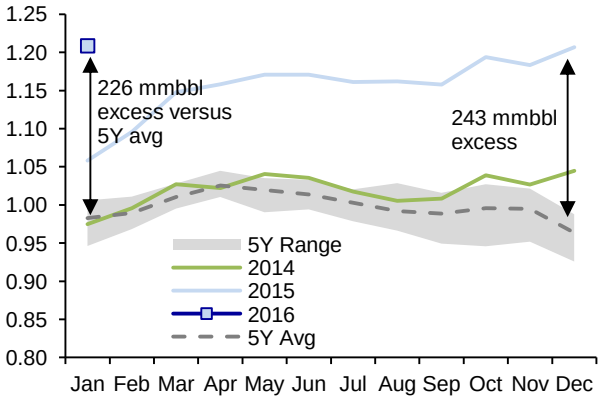
While China apparent consumption data of the last four months at +461 kb/d yoy does not give us any concern over our 2016 demand growth assumption of +405 kb/d, US measures present more uncertainty at this point. The measure of refinery demand for crude oil shows an large increase of +470 kb/d yoy, while refined products supplied growth shows a slight decline of -63 kb/d yoy. Historically since 2000, refined products supplied growth shows a better fit with final liquids demand growth with a coefficient of determination of 79% versus 42% for refinery demand growth. According to the 2000-15 regression, refined products supplied growth implies a -91 kb/d decline in demand in 2016, while refinery demand growth implies a +419 kb/d growth in demand. We strike a middle ground in our model assumption of unchanged US demand, but note significant uncertainty.

Figure 220: US commercial crude oil inventory (mmbbl)



Source: US EIA, Deutsche Bank

Figure 221: OECD commercial crude oil stocks (billion bbl)



Source: IEA, Deutsche Bank

Some optimistic notes from inventory statistics

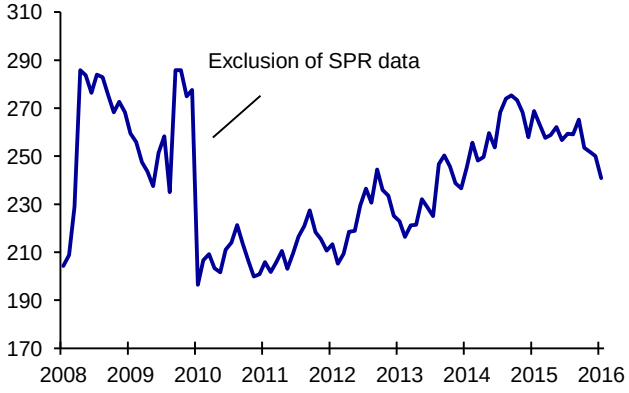
We note some positive developments for the market in inventories both in the US and the OECD as a whole. With the most recent week of US data we can observe some downward divergence of inventory versus our expectation which incorporates published refinery maintenance schedules, an assumed constant level of exports, and the EIA onshore production model. The last week's smaller build has been largely a result of lower imports rather than production, however, which means a continuation of the trend may be less

reliable, in our view. On a capacity utilization measure we are currently at 72% of working storage capacity and may rise to as much as 83% in early May on a high-import assumption of 8.3 mmb/d.

For the OECD, commercial crude oil stocks in January were only very slightly higher than in December meaning that the excess versus the five-year average actually fell from 243 mmbbl to 226 mmbbl. On a capacity utilization measure, the calculated global supply surplus of +737 kb/d in 2016 means an annual inventory build of 269 mmbbl excluding any floating storage build. This number exceeds by 38 mmbbl the IEA's estimate of global inventory capacity growth of 231 mmbbl including 110 mmbbl of Chinese strategic reserve capacity. Assuming all of the projected capacity increase is achieved and that it fills to capacity, this implies a further +38 mmbbl strain on the 2015 capacity level. While this has already drawn concern over possible downside for prices to result from steeper contango, it does represent a slower rate of increase than was observed last year for the OECD alone, +150 mmbbl to January 2016.

For China, we show that commercial crude oil inventories have actually declined since September 2014 by 34 mmbbl, suggesting that there is at least one major region which appears capable of absorbing further inventory accumulation over the next year.

Figure 222: China commercial crude oil inventory (mmbbl)



Source: Reuters, Deutsche Bank

Reassessment of global oil breakevens

Our reassessment of oil incentive cost breakevens based on a November 2015 data set as compared against November 2014 (and incorporating a 10% IRR requirement) for the top twenty liquids producing countries suggests that the long term equilibrium price for oil may not have changed appreciably.

While we see modest decreases in many regions as a result of reduced activity leading to producers squeezing contractors and achieving lower day rates, any long term view on breakeven costs must acknowledge the likelihood that this can cyclically reinflate when activity levels increase. Therefore these declines may be discounted to some extent. Likewise in the case of higher initial productivity from drilling results in the US, as this could be viewed as a consequence of selectively drilling the best sites (high-grading), although improvements in rig efficiency in terms of reducing the number of days to drill and move between drill sites would likely be retained in the longer term.

Several countries, Saudi Arabia, UAE and Mexico, show large changes to breakevens, the reasons for which we describe below. However as a preface we would note that for national oil companies such as Saudi Aramco, ADCO

and Pemex, breakevens are not as useful or relevant as they might be for international oil companies who serve the interests of shareholders rather than national governments. National oil companies may not be beholden to a 10% rate of return, and are likely to be driven more substantially by strategic concerns around energy development or raising export revenue.

For Saudi Arabia, a revised higher breakeven reflects underestimates for both operating and capital expenditures in the previous data set. According to Wood Mackenzie, the long remaining life of many existing projects means that increases to opex have a significant impact, while drilling activity remains at a high pace as well. Since January 2015, OPEC total rig counts have fallen by 40 from 467 to 427 while the Saudi Arabia rig count has risen by 9 from 119 to 128.

Figure 223: Long term incentive cost breakeven for top 20 liquids producing countries* (USD/bbl)

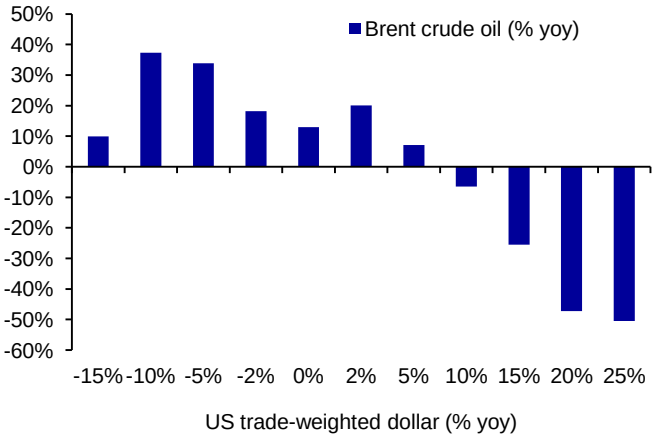
	Nov-14 (USD/bbl)	Nov-15 (USD/bbl)	Remaining reserves (mmboe)	2016 liquids production (kb/d)	2025 liquids production (kb/d)	2016-25 estimated growth from existing projects only (kb/d)	Total reserves (mmboe)	Remaining reserves as share of total reserves (%)
Algeria	23.66	23.62	20,147	1,470	1,215	-254	57,092	35%
Angola	49.95	49.59	10,727	1,876	1,651	-225	22,986	47%
Brazil	40.50	39.56	35,487	2,910	5,634	2,724	46,633	76%
Canada	65.64	63.84	47,162	1,905	1,876	-29	69,764	68%
Canada Oil Sands	45.38	44.35	39,306	2,843	3,893	1,049	46,260	85%
China	36.34	35.08	32,533	4,011	2,012	-1,999	61,297	53%
Colombia	42.86	41.21	2,658	914	174	-740	9,744	27%
Iran	6.25	6.56	57,064	3,566	3,336	-230	134,195	43%
Iraq	5.50	6.18	73,372	3,626	4,982	1,356	108,284	68%
Iraq Kurdistan	25.44	36.98	4,051	430	305	-125	4,570	89%
Kazakhstan	38.99	36.68	17,314	1,668	1,893	224	27,471	63%
Kuwait	14.75	12.65	31,266	2,743	2,508	-235	72,561	43%
Mexico	68.19	81.92	8,952	2,232	912	-1,320	38,304	23%
Nigeria	41.04	36.78	19,025	2,285	1,963	-322	56,009	34%
Norway	35.91	28.55	21,875	2,004	1,768	-236	63,027	35%
Oman	34.01	41.00	5,121	900	448	-452	16,200	32%
Qatar	15.89	17.03	12,260	1,143	747	-397	29,767	41%
Russia	56.18	43.26	207,680	10,577	8,987	-1,590	470,208	44%
Saudi Arabia	7.75	15.92	167,174	11,375	11,299	-77	318,316	53%
UAE	29.73	12.99	50,580	3,562	3,944	383	90,982	56%
US Total	51.77	47.88	101,397	7,106	9,912	2,806	149,477	68%
US Alaska	48.66	43.77	8,791	615	416	-199	28,838	30%
US Gulf Coast	58.72	49.38	5,308	468	685	217	6,568	81%
US GOM Deepwater	39.65	38.00	11,545	1,468	1,418	-50	21,751	53%
US GOM Shelf	40.78	38.34	1,276	191	99	-92	4,981	26%
US Midcontinent	58.38	46.31	4,778	305	411	107	5,632	85%
US Northeast	62.55	60.00	4,451	82	268	186	4,627	96%
US Permian	53.84	51.31	35,487	1,851	3,492	1,641	40,923	87%
US Rocky Mountains	56.68	48.62	25,216	1,533	2,613	1,081	28,333	89%
US West Coast	36.51	40.82	4,546	594	508	-86	7,825	58%
Venezuela	41.10	44.33	19,715	2,063	2,156	93	36,730	54%
Global wtd average	35.91	32.95						

Source: Wood Mackenzie, Deutsche Bank
**All breakevens weighted by remaining reserves*

For the United Arab Emirates, the difference between the calculated breakevens results from a recontracting process in 2015 which renewed the involvement of Total and INPEX with Abu Dhabi Company for Onshore Oil Operations (ADCO). According to Wood Mackenzie the remaining life of the field was extended, spreading costs over a longer period. Since the project represents 39% of remaining reserves in the UAE the reduction in breakeven affected the country-level result.

For Mexico, two shallow-water projects (Cantarell and Litoral de Tabasco, together representing 31% of remaining reserves) have seen upward revisions to costs. At Cantarell, mismanagement of the reservoir and expensive methods of oil recovery have proven a loss-making exercise, while at Litoral de Tabasco, there has been an increase in opex as a result of the age of the field.

Figure 224: Brent crude oil sensitivity to US trade-weighted dollar changes (% yoy)



Source: Bloomberg Finance LP, Deutsche Bank

The role of the US dollar

Finally we believe we should not discount the role of the US dollar in lifting oil prices this year, even if the daily correlations against the trade-weighted dollar remain unconvincing. Using a 60-day window of daily returns, the correlation of the dollar trade-weighted index actually stands at a meager -0.04. However if we run a sensitivity on year-over-year changes in Brent against the dollar trade-weighted index since 1993, we find that declines in the dollar can even result in crude oil rising by several times the move in the dollar index, Figure 9.

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Figure 225: Global oil supply & demand

Unit: Million bbl/day	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E	ANNUAL AVERAGE RATE '00-05	'05-10	'10-15
CONSUMPTION																	
OECD Americas	25.9	24.6	23.7	24.2	24.1	23.6	24.1	24.1	24.4	24.3	24.3	24.2	24.2	24.1	1.2%	-1.3%	0.1%
USA	20.7	19.5	18.8	19.2	18.9	18.5	19.0	19.1	19.4	19.4	19.3	19.3	19.2	19.2	1.1%	-1.6%	0.2%
OECD Europe	15.6	15.4	14.7	14.7	14.2	13.8	13.6	13.5	13.7	13.7	13.6	13.6	13.5	13.4	0.6%	-1.4%	-1.4%
Germany	2.4	2.5	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	-1.1%	-1.2%	-0.6%
OECD Asia-Pacific	8.6	8.3	7.9	8.1	8.1	8.5	8.3	8.1	8.1	8.1	8.0	8.0	8.0	8.0	-0.1%	-1.7%	0.0%
Japan	5.0	4.8	4.4	4.4	4.4	4.7	4.6	4.4	4.2	4.1	4.1	4.0	4.0	3.9	-0.7%	-3.5%	-1.0%
TOTAL OECD	50.2	48.4	46.3	47.0	46.4	45.9	46.0	45.7	46.2	46.1	45.9	45.8	45.6	45.5	0.8%	-1.4%	-0.4%
FSU	4.1	4.2	4.0	4.3	4.6	4.6	4.7	4.9	4.9	5.0	5.1	5.2	5.3	5.4	0.6%	1.9%	2.8%
Europe	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	4.5%	-1.4%	-0.1%
China	7.6	7.8	7.9	9.1	9.5	9.9	10.3	10.6	11.2	11.6	11.9	12.3	12.7	13.0	7.8%	6.1%	4.3%
Other Asia	9.8	9.7	10.1	10.7	11.0	11.4	11.8	12.1	12.6	12.8	13.1	13.4	13.6	13.9	2.9%	3.6%	3.3%
Latin America	5.3	5.7	5.7	6.1	6.3	6.5	6.7	6.8	6.8	6.9	7.0	7.1	7.2	7.3	1.3%	3.9%	2.1%
Middle East	6.4	6.8	7.2	7.3	7.5	7.8	7.9	8.0	8.2	8.4	8.6	8.8	9.1	9.3	4.6%	4.0%	2.4%
Africa	3.1	3.3	3.4	3.6	3.6	3.8	3.9	4.0	4.1	4.2	4.4	4.5	4.7	4.8	3.5%	4.1%	2.5%
TOTAL NON-OECD	37.1	38.2	39.2	41.7	43.1	44.8	45.9	47.1	48.4	49.5	50.8	52.0	53.3	54.5	3.6%	4.0%	3.0%
GLOBAL OIL DEMAND	**87.2**	**86.6**	**85.5**	**88.7**	**89.6**	**90.7**	**91.9**	**92.8**	**94.6**	**95.6**	**96.7**	**97.8**	**98.9**	**100.1**	1.9%	0.9%	1.3%
SUPPLY																	
OECD Americas	13.8	13.3	13.6	14.1	14.5	15.8	17.2	19.1	19.9	19.4	19.6	19.8	20.1	20.3	-0.4%	0.2%	7.2%
USA	7.0	6.9	7.4	7.8	8.1	9.1	10.3	12.0	12.9	12.3	12.2	12.2	12.2	12.2	-2.4%	1.8%	10.8%
Mexico	3.5	3.2	3.0	3.0	2.9	2.9	2.9	2.8	2.6	2.5	2.5	2.6	2.7	2.7	1.8%	-4.7%	-2.6%
Canada	3.3	3.2	3.2	3.3	3.5	3.7	4.0	4.3	4.4	4.6	4.8	4.9	5.1	5.4	2.2%	1.8%	5.6%
OECD Europe	5.0	4.7	4.5	4.2	3.8	3.5	3.3	3.3	3.5	3.4	3.1	2.9	2.7	2.5	-3.5%	-6.0%	-3.6%
North Sea	4.6	4.3	4.1	3.8	3.4	3.1	2.9	2.9	3.1	2.8	2.6	2.4	2.2	2.0	-3.9%	-6.4%	-4.0%
Other OECD	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	-7.2%	1.3%	-6.7%
TOTAL OECD	19.4	18.7	18.8	18.9	18.9	19.8	21.0	22.9	23.8	23.2	23.1	23.1	23.1	23.1	-1.6%	-1.3%	4.8%
FSU	12.8	12.8	13.1	13.8	13.8	13.8	13.9	13.9	14.0	14.0	13.9	13.9	13.8	13.7	8.2%	3.1%	0.3%
Non-OECD Europe	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-3.3%	-2.4%	-0.1%
China	3.7	3.8	3.8	4.1	4.1	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.4	2.2%	2.3%	1.2%
Other Asia	2.7	2.6	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.7	2.6	2.5	2.5	2.4	3.0%	0.0%	0.2%
Latin America	3.6	3.7	3.9	4.1	4.2	4.2	4.2	4.4	4.6	4.5	4.7	4.9	5.1	5.3	2.1%	3.2%	2.2%
Middle East	1.7	1.7	1.7	1.8	1.7	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	-3.3%	-1.0%	-6.5%
Africa	2.6	2.6	2.5	2.5	2.6	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	4.2%	0.6%	-1.6%
TOTAL NON-OECD SUPPLY	27.2	27.3	27.8	29.1	29.2	28.7	28.7	28.9	29.3	29.1	29.2	29.2	29.3	29.3	4.4%	2.1%	0.2%
PROCESSING GAINS	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	1.3%	1.2%	1.5%
GLOBAL BIOFUELS	1.0	1.4	1.6	1.8	1.9	1.9	2.0	2.2	2.3	2.4	2.5	2.6	2.7	2.8	17.3%	23.9%	4.7%
TOTAL NON-OPEC SUPPLY	**49.7**	**49.5**	**50.2**	**51.8**	**52.1**	**52.5**	**53.9**	**56.3**	**57.7**	**57.0**	**57.0**	**57.2**	**57.4**	**57.7**	1.6%	1.2%	2.2%
TOTAL SUPPLY	85.6	86.6	85.3	87.5	88.8	90.9	91.4	93.8	96.4						1.9%	0.6%	2.0%
Total Supply Assumption										96.4	96.9	97.1	64.3	64.6			
OECD STOCK CHANGE	-0.24	0.32	0.01	0.07	-0.28	0.21	-0.17	0.39	0.77								
Industry	-0.31	0.32	-0.09	0.08	-0.20	0.18	-0.20	0.40	0.75								
Government	0.07	0.01	0.11	-0.01	-0.08	0.03	0.03	-0.01	0.02								
OPEC NGLS	4.5	4.6	5.2	5.7	6.0	6.4	6.3	6.5	6.7	6.8	6.8	6.8	6.9	6.9	6.7%	5.4%	3.4%
***MARKET SURPLUS (DEFICIT)**	-1.34	-0.34	-0.21	-1.32	-0.51	-0.02	-0.38	0.56	1.08	0.79	0.23	-0.65	-1.49	-2.34			
Including OECD Stock Changes	*-1.57*	*-0.02*	*-0.20*	*-1.26*	*-0.79*	*0.19*	*-0.55*	*0.95*	1.85	0.79	0.23	-0.65	-1.49	-2.34			
OPEC CRUDE OIL	31.5	32.5	30.0	30.0	30.7	32.1	31.2	31.0	32.1						1.7%	-1.0%	1.3%
OPEC Assumption										32.7	33.1	33.1					
IEA's Call on OPEC Crude	33.1	32.5	30.1	31.3	31.5	31.9	31.7	30.0	30.2								
DB's Call on OPEC Crude									**30.2**	**31.8**	**32.9**	**33.7**	**34.6**	**35.5**			

Source: IEA, Deutsche Bank

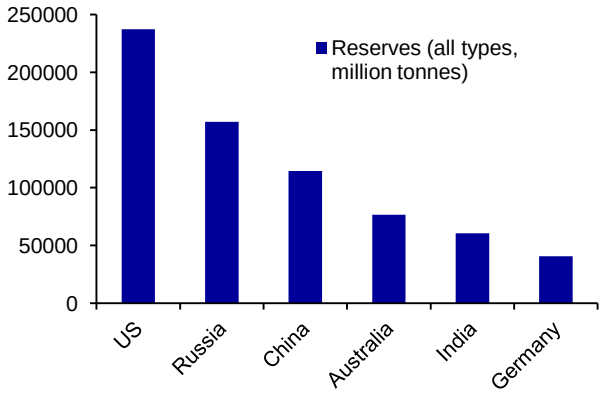
Thermal Coal: Surpluses are here to stay

- The looming oversupply in the future market balance is higher than ever after building in the impact of higher expectations of Indian domestic production through FY20. Therefore we expect price pressure to generally remain to the downside.
- Based on Coal India production rising from 494 mt in FY15 to 693 mt in FY20 in Indian coal equivalent terms, we see Indian import demand falling from roughly 160 mt in 2015 to 90 mt in 2018.
- Discussions underway on a possible relaxation of the Indian equivalent of the Jones Act could mean that foreign vessels of larger capacity could participate in coastal shipments of coal from east to west, reducing transportation costs and complementing higher domestic production.
- While further generalized weakness in the US dollar would complicate issues for producers, our assumptions on further dollar strength would mean that both Indonesia and South Africa are exposed on costs, while Australia and Russia are protected by comparison.
- The market is in the midst of a Q1 rally, but we do not see this as anything more than a seasonal perturbation which historically continues into Q2 but then fades in H2 with an average decline of 3% comparing H2 to H1.
- The ongoing decline in Chinese seaborne demand is continuing this year and we forecast annual net imports down 22% to 117 mt, following a 33% decline last year. Although January net imports are off this schedule at only -6% down, we expect a slower rate of power demand growth and overcapacity in domestic supply will continue.
- Widening of the premium for US coal over international benchmarks likely means that US exports will decline further this year, softening the impact for the seaborne market.
- The extension of coal-price weakness means that the strain on miners has only increased with doubts over Peabody as a going concern and both Anglo American and Vale looking to sell assets in preparation for what may eventually become an exit from the business.
- Increasing backwardation in the face of falling demand over the past six months appears to be a result of falling long-term price expectations more than prompt market shortages. Therefore while the curve certainly does discincentivise storage we have doubts over whether this presages higher prices in the near term.
- Paradoxically, market participants point to the longstanding backwardation as a reason to now drawdown inventories, thus postponing demand. This turns the traditional logic on its head – instead of backwardation being a sign of prompt deficits, backwardation may be providing the market with incremental supply.

Surpluses are here to stay

Although we revise higher historical deficits in 2013 and 2014 based on Eurostat data for European imports, the long-term forward balances look as wide as ever now that we assume the full impact of our expectations in softening demand in China and India from greater reliance on the domestic coal resources. China and India rank third and fifth in the world in coal reserves, behind the US, Russia and Australia, Figure 1.

Figure 226: Coal reserves by country (million tonnes)



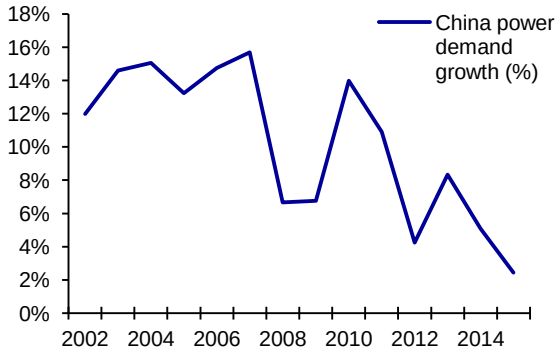
Source: BP Statistical Review, Deutsche Bank

Slowing power demand growth in China

In China, growth in power consumption has flagged in the past several years from an average pace of 10.7% p.a. over the 2006-11 period to only 5.0% p.a. from 2011-15, and 2.4% yoy in 2015. A slower pace of power consumption growth going forward combined with growth in power generation from wind, nuclear, hydroelectric, solar and biomass may allow the government to place less emphasis on thermal coal in accordance with the interest in reducing pollution. In addition, improving thermal efficiency in new build coal capacity may reduce incremental coal demand. Over the next five years we expect China's domestic consumption to remain virtually stagnant, rising only 0.7% p.a. as a result of a plateau in coal demand for power generation, a rise in coal demand for fertilizer and chemical production, and a decline in coal demand for other purposes.

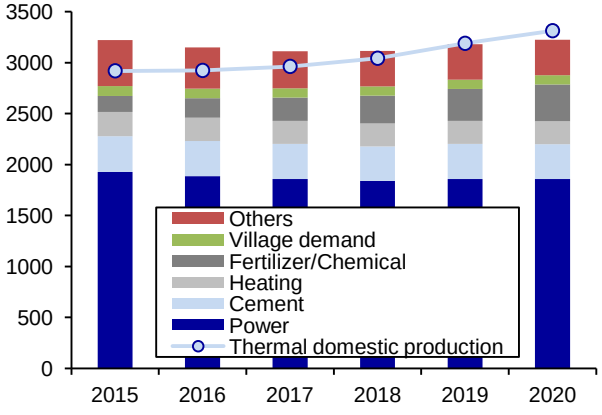
At the same time, we expect China's domestic thermal coal production to rise only slowly at 1.3% p.a. as the small mine consolidation program continues and the government focuses on controlling overcapacity. This results in a slow narrowing of its seaborne import demand with the potential for net exports by the end of the decade, Figure 3.

Figure 227: Coal reserves by country (million tonnes)



Source: Bloomberg Finance LP, Deutsche Bank

Figure 228: China thermal coal supply demand



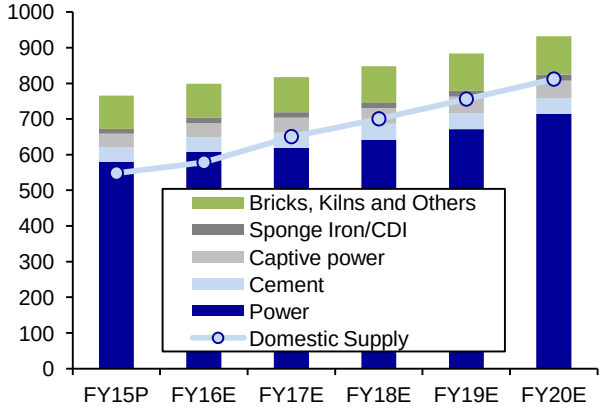
Source: DB China Metals & Mining

Indian domestic coal modernisation

In India, we maintain an expectation of steady growth in domestic production as a result of Coal India's renewed push for investment, modernization, and improved efficiency. Streamlined environmental clearances for land approval and upgrades to underground mining technology will facilitate incremental output while GPS-tracking of trucks should reduce losses owing to theft. In Indian coal equivalent terms (3,600 kcal/kg) we maintain an expectation of domestic supply growing to 812 mt in fiscal year 2020 including Coal India production of 693 mt, against demand growth of 4.0% p.a. to 932 mt in fiscal year 2020, and a narrowing of seaborne import demand to 121 mt. In import terms of 4,875 kcal/kg this equates to 90 mt of import demand in 2020.

Discussions underway on a possible relaxation of the Indian equivalent of the Jones Act could mean that foreign vessels of larger capacity could participate in coastal shipments of coal from east to west, reducing transportation costs and complementing higher domestic production in the long term. The cabotage rules currently prevent foreign-flagged vessels from delivering cargo between domestic ports, unless no Indian-flagged vessel is available. However the relaxation so far appears to be limited to container ships for a limited number of ports for which container transshipment represents at least half of its total volume.

Figure 229: India coal supply demand balance in Indian coal equivalent terms



Source: DB India Mining Research

More stringent limits for European powerplant emissions

New risks to European coal demand originate from the EU's Industrial Emissions Directive effective as of January 2016 which imposes new emission limit values for combustion plants. These limits impose more stringent limits on SO2, NOx, and dust, particularly for newer plants not granted a permit before 7 January 2013. As costly investments to achieve compliance may be judged uneconomic for older plants, closures are expected to accelerate as a result in the amount of 8 GW by the end of the year according to McCloskey. Assuming a calorific value of 6,000 kcal/kg NAR this equates to reduced coal consumption of 18.2 mt per year by 2017 and lowers our 2017 European import assumption to 183 mt from 197 mt previously, as compared with 2015 imports of 201 mt.

Figure 230: Emission limit values according to Large Combustion Plant Directive

	Large Combustion Plant Directive (existing plant)				Large Combustion Plant Directive (new plant)		
Total rated thermal input (MW)	SO2	NOx	Dust	Total rated thermal input (MW)	SO2	NOx	Dust
50-100	2000	600	100	50-100	850	400	50
100-300	2000 to 400*	600	100	100-300	200	200	30
300-500	2000 to 400*	600	100	300-500	200	200	30
> 500	400	500	50	> 500	200	200	30

Source: European Commission, Deutsche Bank
** Sliding scale*

Figure 231: Emission limit values according to Industrial Emissions Directive

	Industrial Emissions Directive (existing plant)				Industrial Emissions Directive (new plant)		
Total rated thermal input (MW)	SO2	NOx	Dust	Total rated thermal input (MW)	SO2	NOx	Dust
50-100	400	300	30	50-100	400	300	20
100-300	250	200	25	100-300	200	200	20
300-500	200	200	20	300-500	150	150	10
> 500	200	200	20	> 500	150	150	10

Source: European Commission, Deutsche Bank

Cash costs influenced by currency moves

We revise lower our expectations of this year's Indonesian export supply by the largest increment from 361 mt to 331 mt. We believe this is consistent with Indonesian costs now being toward the top end of global seaborne costs on a weighted average basis, a reversal of fortune since the situation as late as 2014. Consequently we see Indonesian producers under pressure to reduce costs by lowering strip ratios and reducing overburden removal by 15-20% according to SX Coal. In addition we observe a lower production target from the government of 419 mt in 2016 (revised lower from 425 mt), and prospects for higher domestic coal demand in the medium term as an expansion in coal-fired generation may consume an additional 54 mt by 2019.

Figure 232: Exchange rate assumptions

	2013	2014	2015	2016	2017	2018	2019	2020
AUDUSD	0.97	0.90	0.75	0.71	0.58	0.65	0.7	0.7
USDRUB	31.86	38.63	61.25	77.24	63	60	55.52	55.52
USDIDR	10,438	11,881	13,398	13,753	13,000	13,000	13,000	13,000
USDZAR	9.65	10.85	12.78	16.15	18.0	14.0	14.0	14.0
USDCNY	6.15	6.16	6.29	6.57	7.0	7.0	7.0	7.0
USDVND	21,030	21,199	21,923	22,349	22,349	22,349	22,349	22,349
USDCAD	1.03	1.10	1.28	1.38	1.45	1.3	1.2	1.2

Source: Deutsche Bank

Currencies are having an outsized effect on cash costs although producer costs are only partially denominated in local currency. The Indonesian rupiah has lost only 3% this year versus its average value in 2015 versus the dollar. It compares favorably against the Russian ruble and South African rand, both down 26% from their 2015 averages. However, we expect overvaluation of USDRUB to fade into 2017 as oil prices stabilize and more attention is paid to improving macro fundamentals and balance of payments, putting some

margin pressure back on Russian producers. For South Africa, however, we have become bearish on the rand in light of the risk of an outright recession this year and deteriorating business and consumer confidence. This would protect South African producers with a weighted average cash cost below USD 40/t.

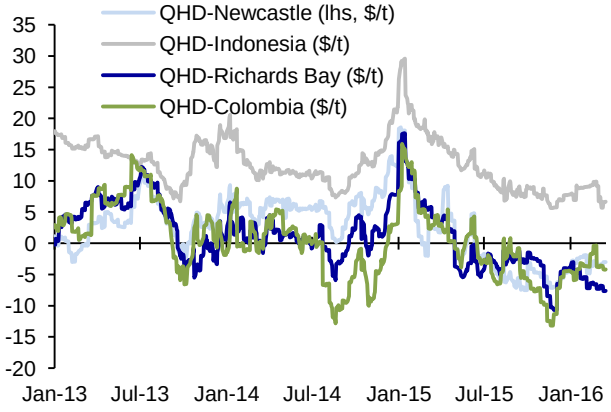
Figure 233: Weighted average total FOB cash costs for export

	2013	2014	2015	2016	2017	2018	2019	2020
Australia	74.9	62.8	50.2	46.5	39.5	45.9	50.9	52.8
Russia	78.5	67.1	48.5	40.9	52.4	57.5	65.0	68.0
Indonesia	63.8	58.2	48.4	50.0	54.6	56.3	57.9	59.1
South Africa	55.6	52.9	45.0	37.8	36.9	49.5	52.1	55.7
Colombia	52.1	50.5	41.2	41.3	42.4	43.7	45.2	47.0
Mozambique	115.8	124.2	106.2	81.0	74.9	74.1	74.7	76.8
Venezuela	73.3	97.8	90.7	79.5	78.7	77.8	78.9	81.6
US Appalachia	77.6	68.2	63.7	65.0	65.8	67.1	68.9	70.9
US Powder River	73.1	67.8	63.2	64.1	65.8	67.0	68.7	70.5
Canada	91.2	87.7	75.1	70.3	68.3	70.0	74.3	74.9
Vietnam	75.7	67.1	58.8	58.6	64.0	65.0	70.0	75.3
China coastal*		69.3	70.7	67.7	63.5	63.5	63.5	63.5
China inland*		46.9	41.9	41.1	41.1	41.1	41.1	41.1

Source: Wood Mackenzie, Deutsche Bank
**Except China for which domestic prices are shown*

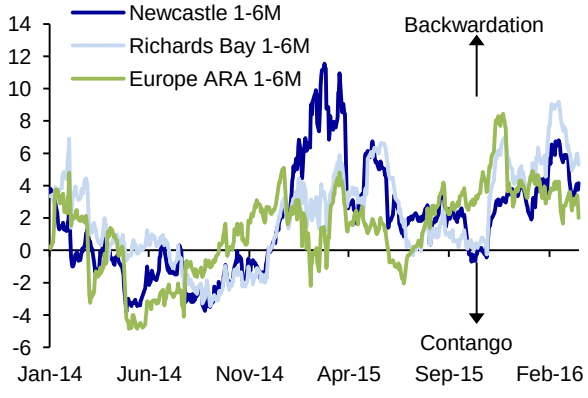
Amongst the top five exporting countries (Australia, Russia, Indonesia, South Africa and Colombia) we see Indonesia and eventually Russia being under the most pressure from narrower margins in 2017, and consequently these exporters may see volumes fall in response to lower seaborne demand. For the United States we see price competitiveness remaining poor in the medium term and export volumes consequently falling again this year by half after falling by a third last year.

Figure 234: Delivered import prices to Guangzhou China losing competitiveness against Qinhuangdao (QHD)



Source: Bloomberg Finance LP, Deutsche Bank

Figure 235: Coal forward curve

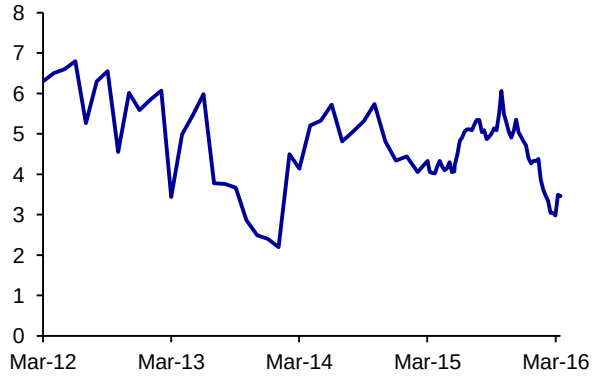


Source: Bloomberg Finance LP, Deutsche Bank

In fact only Indonesia retains an energy-adjusted price advantage into southern China as compared with Chinese domestic coal shipped from Qinhuangdao to Guangzhou. Neither Australia (Newcastle), South Africa (Richards Bay) nor Colombia are economic according to our calculation, Figure 9. If US Central Appalachian coal and US Powder River Basin coal were to be plotted on the same chart in delivered prices to China, they would register at an even larger USD-54/t and USD-33/t disadvantage, respectively.

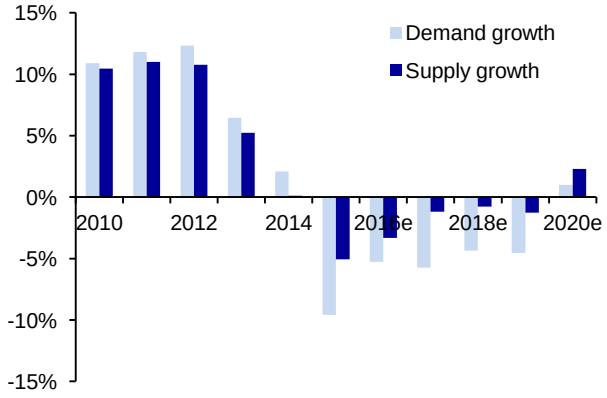
Thus Qinhuangdao can be said to leading the market lower in terms of pricing despite a consistent backwardation in the forward curve since 2014. Normally a signal of prompt market shortages and a consequent incentivisation of inventory withdrawal to supplement mined supply, the backwardation today has turned that logic on its head and is being cited as a reason to withdraw stocks into an oversupplied market. Stock levels at Qinhuangdao are roughly near the long-term average in days of supply, but stocks at ARA are tied for the lowest in the last five years despite a relatively warm winter.

Figure 236: ARA combined stocks (million tonnes)



Source: McCloskey, Deutsche Bank

Figure 237: Global seaborne thermal coal market growth



Source: Deutsche Bank

Whatever the underlying reason for the backwardation we do not believe it to be a sign of an impending recovery given the long term outlook which involves a series of consecutive annual declines in seaborne demand for the next several years, Figure 12. Therefore we expect prices to remain under pressure for the foreseeable future while producers are forced to rationalize operations to improve margins where possible and reduce volumes otherwise.

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Figure 238: Seaborne thermal coal supply and demand (million tonnes)

Including Anthracite, Bituminous, Sub-bituminous, and Lignite

	2010	2011	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Indonesian exports	298	353	384	424	408	367	331	307	295	286	281
growth	*27%*	*18%*	*9%*	*10%*	*-4%*	*-10%*	*-10%*	*-7%*	*-4%*	*-3%*	*-2%*
Australian exports	142	148	171	188	201	201	210	219	224	223	220
growth	*2%*	*4%*	*16%*	*10%*	*7%*	*0%*	*4%*	*4%*	*3%*	*-1%*	*-1%*
Russia exports	75	86	103	110	117	112	112	111	107	102	100
growth	*-3%*	*15%*	*20%*	*7%*	*6%*	*-4%*	*0%*	*-1%*	*-4%*	*-4%*	*-2%*
South African exports	71	69	76	71	76	77	79	81	83	84	84
growth	*5%*	*0%*	*6%*	*-5%*	*7%*	*2%*	*2%*	*3%*	*2%*	*1%*	*1%*
Colombian exports	69	76	79	74	75	80	82	84	86	88	90
growth	*9%*	*10%*	*4%*	*-7%*	*2%*	*7%*	*2%*	*2%*	*2%*	*2%*	*2%*
US exports excl. Canada & Mexico	15	30	46	42	30	21	10	10	10	10	10
China exports	18	11	8	6	5	4	10	10	10	10	39
Other exports	127	131	135	139	143	139	135	135	135	135	135
Total seaborne thermal supply (Mt)	**815**	**905**	**1002**	**1054**	**1056**	**1002**	**969**	**957**	**950**	**938**	**960**
growth	*10%*	*11%*	*11%*	*5%*	*0%*	*-5%*	*-3%*	*-1%*	*-1%*	*-1%*	*2%*
Japanese imports	131	126	139	141	145	150	152	154	156	158	160
growth	*12%*	*-4%*	*10%*	*2%*	*3%*	*3%*	*1%*	*1%*	*1%*	*1%*	*1%*
Korea & Taiwan imports	163	174	170	172	175	177	180	183	186	189	193
growth	*11%*	*6%*	*-2%*	*1%*	*1%*	*1%*	*2%*	*2%*	*2%*	*2%*	*2%*
European imports	187	209	223	245	239	212	201	183	179	160	164
growth	*-5%*	*12%*	*7%*	*10%*	*-2%*	*-11%*	*-5%*	*-9%*	*-2%*	*-10%*	*3%*
China imports	137	178	235	252	229	155	127	90	51	11	0
growth	*40%*	*29%*	*32%*	*7%*	*-9%*	*-32%*	*-18%*	*-30%*	*-43%*	*-78%*	*-97%*
India imports	75	92	119	139	172	160	130	110	90	90	90
growth	*25%*	*22%*	*30%*	*16%*	*24%*	*-7%*	*-19%*	*-15%*	*-18%*	*0%*	*0%*
Other imports	132	146	152	156	168	167	177	192	209	223	232
Total seaborne thermal demand (Mt)	**826**	**924**	**1038**	**1105**	**1128**	**1020**	**966**	**911**	**871**	**831**	**840**
growth	*11%*	*12%*	*12%*	*6%*	*2%*	*-10%*	*-5%*	*-6%*	*-4%*	*-5%*	*1%*
Notional market balance	**-12**	**-19**	**-36**	**-51**	**-73**	**-18**	**3**	**47**	**79**	**107**	**120**

Source: McCloskey, AME, BP, CEIC, Deutsche Bank

Precious Metals

Rising financial risks underpin gold

The following section on Precious Metals has been contributed by our commodities analysts:
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- The conditions that led us to forecast gold falling below USD1,000/oz have changed. Slowing global growth momentum, the rising risk of a US credit default cycle, and the increasing likelihood of a large one-off RMB devaluation means that the Fed has become far more dovish in its stance to tightening interest rates, although stopping short of a full scale "Fed – relent". US rates are now expected to end the year at current levels, and the upward trajectory of the S&P500 is no longer a given in our view.
- In a world of rising real interest rates, rampant equity markets and strong global growth, gold struggles to perform. However, our Deutsche Bank economists have started chipping away at their US and Euroland GDP forecasts, and we would not be surprised to see consensus global forecasts slip below 3%. Our Fixed Income analysts expect 10Y Treasury yields to end Q4'16 at 1.75%, which implies that real yields will end the year at current levels. Although our US equity strategists have only trimmed their year-end S&P500 forecasts modestly, we see risks from US high yield credit defaults which would weigh on equity markets. The combination of all these changes makes the environment more favourable for gold.
- Short term price movements have become sensitive to the movements in forward market implied probability of a rate hike. The probability of a rate hike at the upcoming Fed meetings has been the cause of gold price volatility, and has presented some interesting trading opportunities. This is likely to continue, although the adjustment of the "dot plot" closer to market expectations may limit the scope for extreme volatility over the course of the year. Now that the Fed and the market are more closely aligned, the probability of a credit default cycle and a one-off RMB devaluation have eased, we think the upside risks for gold are more capped in the near term.
- Gold screens as expensive relative to its medium term trading levels, as well as relative to other commodities and economic metrics. A bit like insurance which is often a grudge purchase for many, some investors may balk at the current levels. We would however argue that given the plethora of negative deposit rates globally, the holding cost of gold is now negligible in many jurisdictions, and therefore gold deserves to be trading at elevated levels versus many other assets.
- In the near-term, global risks have eased with accommodative monetary policy from the Fed and the ECB. Likewise the risk of an RMB devaluation has also diminished as Chinese authorities slowly close the import loophole and stem the outflow of FX reserves. Investor positioning on the Comex is now more extreme, and ETF inflows have started to slow. Q1 is a seasonally strong period for gold, so in our view Q2 and Q3 will provide better opportunities to purchase insurance. So whilst we think, Q4'15 marked the lows in USD gold prices, we do expect prices to weaken in Q2 from current spot levels, providing the opportunity for an entry point.

A time to buy insurance although it may feel expensive

Our call on Gold breaching the USD1,000/oz level (to the downside) by Q4'16 was based on rising US real yields, a buoyant US equity market, and three rate hikes by the Fed. Furthermore, with our expectation of an appreciating USD versus the trade weighted basket and global growth well above 3%, all the key

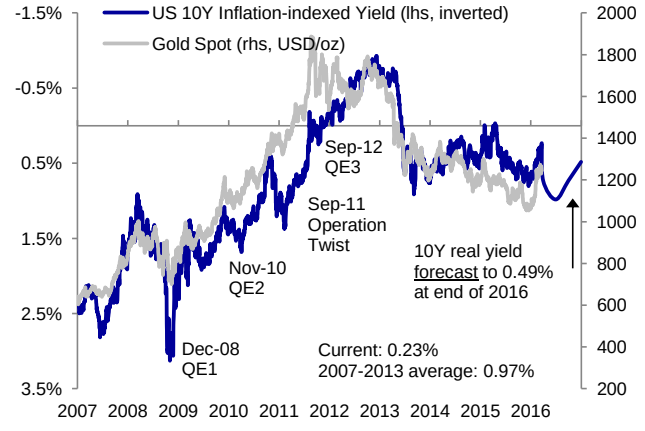
financial and economic indicators pointed to a gold price grinding lower over the course of 2016. Over the past two months, financial factors have changed and no longer look as bearish for gold. We think that the risks in the global financial system have risen, such that a central bank mis-step is now more likely. The adoption of negative deposit rates in Switzerland, Sweden, Denmark, the Eurozone and Japan increases gold's attractiveness, reducing its holding costs. However, as with any insurance policy, the premium paid should be carefully considered. The first quarter is a seasonally strong period for gold and gold is now expensive versus other commodities and versus historical levels. In our view Q2 and Q3 will provide better opportunities to purchase insurance. So whilst we think Q4'15 marked the lows in USD gold prices, we do expect prices to weaken in Q2 from current spot levels.

US real yields are now neutral for gold

In their 2016 outlook, our US Fixed income analysts were forecasting the US 10Y rate to rise from 2.21% to 2.5% by the end of 2016. This implied a 10Y real yield of 0.94% by the end of 2016. The team ultimately expects a Fed relent and have adjusted their projected rate path lower. They expect 10Y Treasury yields to finish Q1 at 2%, Q2at 2.25%, Q3 at 2% and Q4 at 1.75%. This implies that year end real yields will end 2016 at roughly current levels.

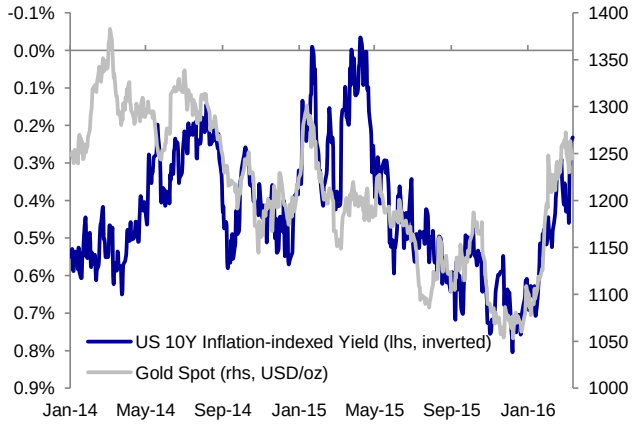
Divergent monetary policy remains the problem given the environment of weak global demand. We expect the Fed to continue eking out tighter policy, only to be derailed by tightening financial conditions or deteriorating activity and inflation data. The recent FOMC meeting already suggests a far more dovish tone from the Fed. Due to the strong easing bias by the ECB, the BOJ and the PBOC, we believe that the Fed will ultimately relent. This would signal a far more (permanently?) benign environment for gold. In the near term, we think the gold price has overshot the move in US real rates however.

Figure 239: The progression of real rates – neutral by year-end



Source: Deutsche Bank, Bloomberg Finance LP

Figure 240: Near-term overshoot versus US real rates

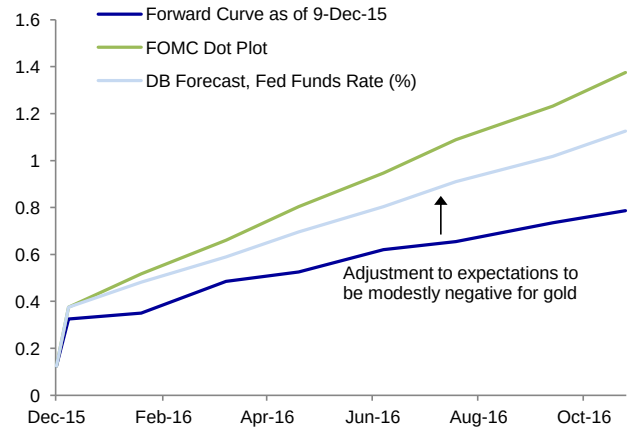


Source: Deutsche Bank, Bloomberg Finance LP

Shifting market rate expectations will continue to drive short-term volatility

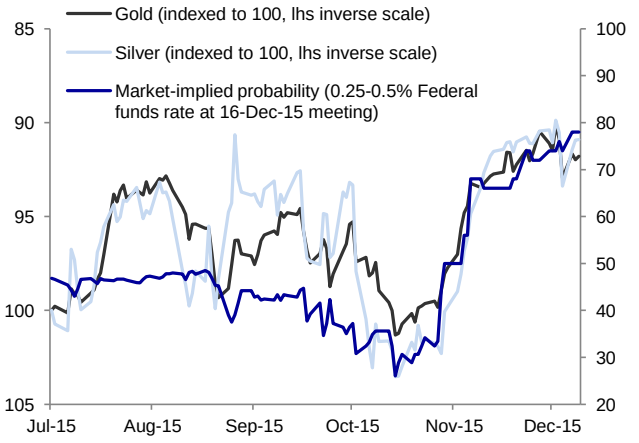
The big adjustment in the market-implied probability of a higher Fed funds rate at the December FOMC meeting in Q4'15 wiped out roughly 10% of the value of gold and silver.

Figure 241: Market adjustments closer to the FOMC Dot in Q4'15…



Source: Deutsche Bank, FOMC, Bloomberg Finance LP

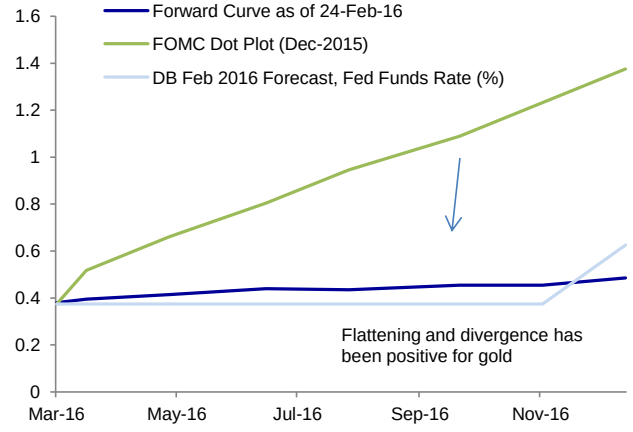
Figure 242: …was negative for gold



Source: Deutsche Bank, FOMC, Bloomberg Finance LP

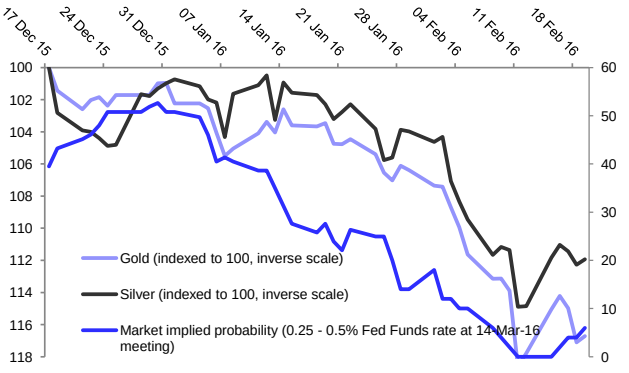
All that reversed in Q1'16, with the market implied probability of a rate hike falling to zero. As a consequence, gold and silver prices are up 14% and 10% respectively.

Figure 243: Market divergence away from the Fed in Q1'16…



Source: Deutsche Bank, FOMC, Bloomberg Finance LP

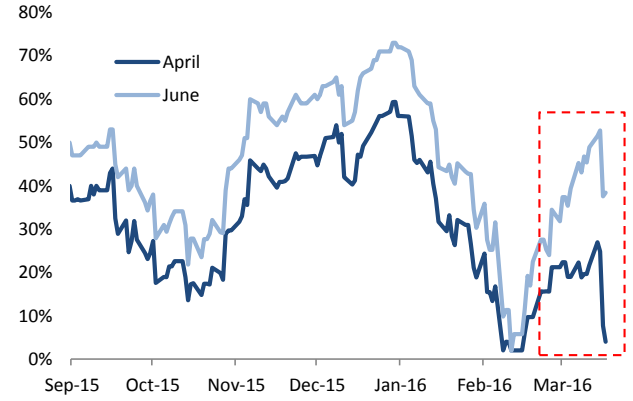
Figure 244: …has been positive for gold



Source: Deutsche Bank, Bloomberg Finance LP

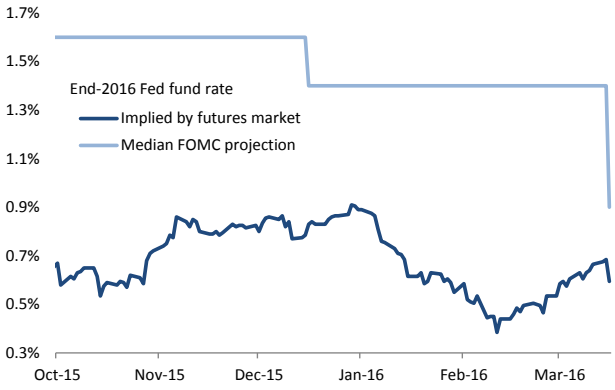
US core inflation and strong job creation still presents the Fed with a problem, so we do not expect one-way price movement over the course of the year. The DB house view is now for only one rate hike this year, and for the pace to accelerate in 2017. Should this be the case, then the rate hike headwinds may re-emerge in 2017. Our forecasts in 2017 do not price in an acceleration of the hiking cycle. The recent Fed guidance also puts a low probability on the occurrence. The market-implied probability of a Fed rate hike in June fell from 55% to below 40% following the dovish Fed surprise, whilst April has dropped to 8%. Furthermore, the drop in the Fed's projected year end rate has reduced the gap with the market projected rate. This points to reduced risk of market expectations being pushed up by aggressive Fed rhetoric going forward.

Figure 245: Market implied probability of a Fed rate hike in upcoming FOMC meetings



Source: Deutsche Bank, DataStream

Figure 246: …the Fed moves closer to the market



Source: Deutsche Bank, Bloomberg Finance LP

Slowing growth expectations ease the headwinds for gold

Since the beginning of the year, our US and European Chief Economists have downgraded their expectations for growth. In Europe, Mark Wall has cut his forecast by 0.2pp to 1.4%. The argument of resilient growth expectations was contingent on the headwinds from slower global growth and a stronger currency being balanced by the tailwind benefits of lower oil prices and the effective transmission of monetary policy through the bank lending channel. The balance between these four forces has been tipped towards the negative by a further slowing of global growth and the headwinds in European banking.

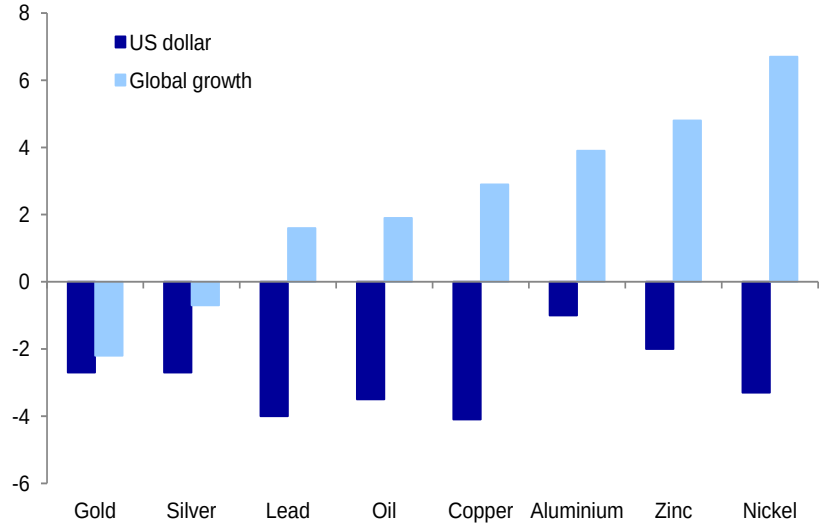
The revision, which is broad-based across euro area members, is concentrated in Q1 and Q2 2016. Lower oil prices offer ongoing protection to private consumption growth. We expect deteriorating lending conditions, and the rise in economic risk and weaker external demand to have the clearest negative impact on investment spending growth. The recent ECB policy easing package was a net positive and skews the risks on European growth to the upside.

Our Chief US Economist Joe LaVorgna has revised down his 2016 real GDP growth and core inflation estimates due to tighter financial conditions (lower equity prices, wider credit spreads, stronger US dollar and tighter bank lending standards), elevated inventories, weak global growth and depressed energy-related capital spending. This backdrop has already produced a contraction in the factory sector, which has the potential to spill over into the services sector. As a result of this weaker economic growth profile, we expect the unemployment rate to be little changed over the course of the year. These factors should keep the Fed on hold longer: Joe is now expecting only one rate hike in 2016, likely in December.

He has reduced our estimates of Q1, Q2 and Q3 real GDP growth in 2016 to 0.5%, 1.0% and 1.2%, respectively. Our Q4 2016 forecast remains unchanged at 2.4%. This compares to our previous projections of 1.5%, 2.2% and 2.1%, respectively. Consequently, full-year 2016 real GDP growth, as measured on a Q4-over-Q4 basis, is now 1.2%, compared to our prior projection of 2.0%. If our forecast is correct, inflation-adjusted output growth in 2016 would match the 2012 post-recession low (Q4/Q4). However, economic activity could be substantially softer if financial conditions were to tighten meaningfully further. We remain concerned about downside risks to output and inflation.

Our global growth forecast remains at 3.1%, similar to 2015, but this is at the slowest pace post the financial crisis. We think the risks are to the downside. Gold has tended to underperform in an environment of strong global growth, so whilst not an outright tailwind, slowing growth certainly eases the pressure on gold in our view.

Figure 247: Historical metal performance versus global growth and the USD



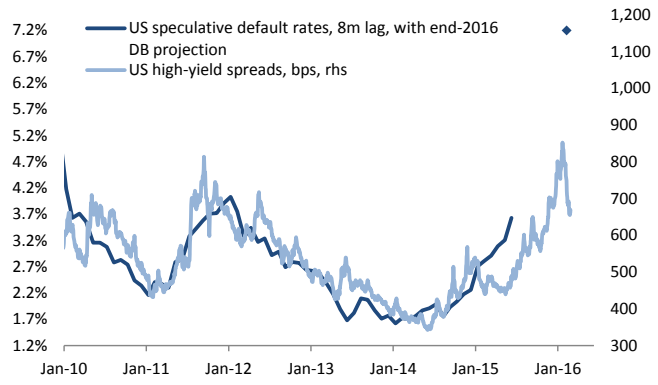
Source: Deutsche Bank, courtesy of the DB Asset Allocation team

Rising financial stresses may have taken a bit of pause…but have not disappeared

There are rising stresses in the global financial system; in particular the rising risk of a US corporate default cycle and the risk of a sharp one-off RMB devaluation due to the sharp increase in China's capital outflows. Both of these "events" would be big negatives for global equity prices. We think the rising risks increase Gold's insurance premium. The increase in commodity prices have however eased the near term pressures and we have seen some easing of US HY credit spreads. Likewise the stemming of foreign reserves through import channels by the Chinese authorities will also ease market fears of a one-off RMB devaluation.

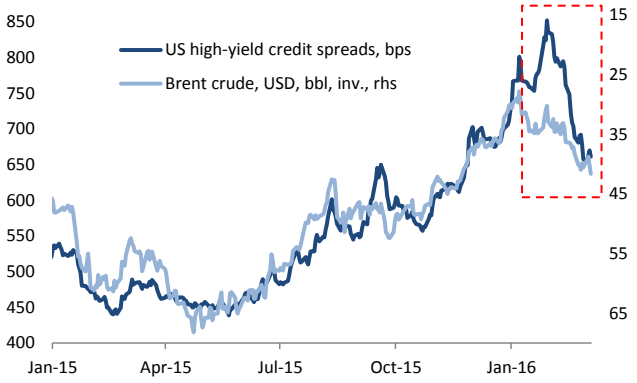
US HY spreads have risen above their 2011 peak and, at 840bps, are discounting a default rate of 5%, compared to the current 3.1% and our credit strategists' projection of 7.2%. Over the past 100 years, when defaults have risen above 4%, they have typically continued to rise close to 10% (i.e. a full default cycle). This is because of the tendency for credit stress to become self-fuelling: a rise in expected defaults pushes up financing costs, which tips some marginal borrowers over the edge, further increasing defaults and so on. However, with the recent recovery in the oil price specifically, the oil heavy US HY market where balance assets are stretched has led to a sharp drop in HY credit spreads. Our credit strategists remain concerned about the outlook for the US HY credit market, where default rates continue rising and balance sheets are still deteriorating. Renewed weakness in commodity prices will bring this issue back to the fore in our view.

Figure 248: US speculative default rates have risen to 3.6% in February – and HY spreads, at 660bps, are now priced for them to stabilize at these levels...



Source: Deutsche Bank, Bloomberg Finance LP

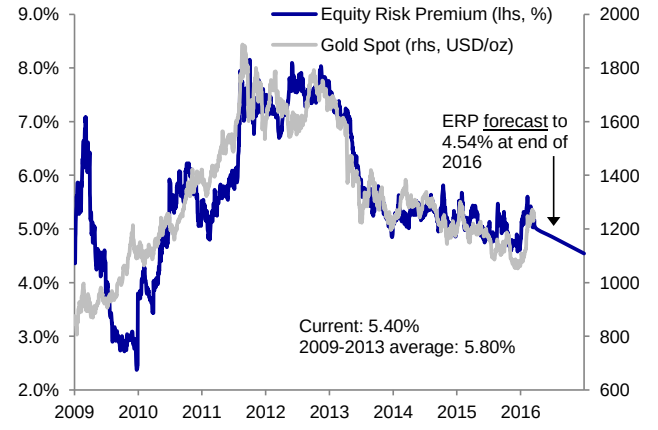
Figure 249: The perception of stress has come down with a rally in the oil price



Source: Deutsche Bank, Bloomberg Finance LP

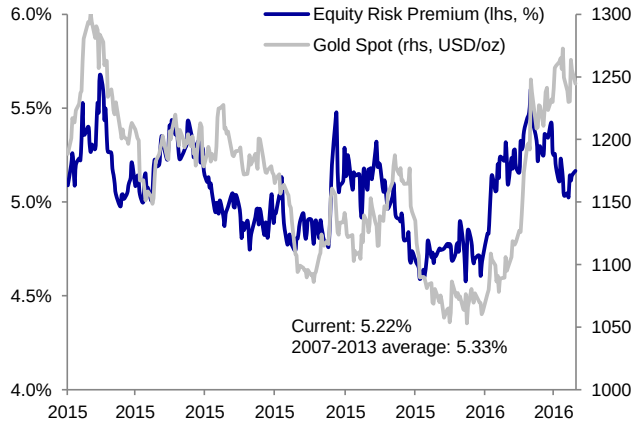
Whilst our S&P target has only been marked down from 2,250 to 2,200, which still implies an equity risk premium much lower by year-end, we think there may be some risks to this target. This would imply less of a downside risk on gold.

Figure 250: The expectation of a strengthening equity market is a headwind for gold



Source: Deutsche Bank, Bloomberg Finance LP

Figure 251: ...but this has not been the case in Q1



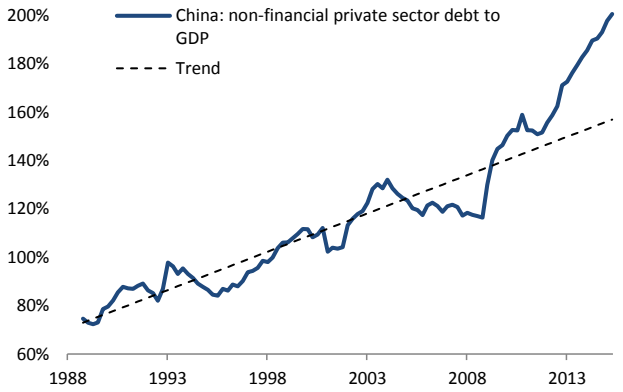
Source: Deutsche Bank, Bloomberg Finance LP

The current depletion of China's FX reserves could lead to further devaluation of the RMB. High private sector leverage means that China will have to keep a loose monetary policy, which puts it at odds with the tightening US cycle. A further RMB devaluation, or at least the expectation thereof could in turn lead to further capital flight which is currently running at an annualized rate of USD1tn. Using the IMF's methodology for reserve adequacy, China only has about USD400bn of "free" reserves left. Our China economist have recently highlighted overpayments for goods imports as the key channel of evading capital controls in China Overpayments for imported goods alone could account for USD300bn of capital outflows between Aug 2015 and Jan 2016, equivalent to over 70% of the FX reserves decline during this period. When comparing the State Administration of Foreign Exchange (SAFE) banking system cross-border payment information with trade data from the customs office shows that, the overpayments for goods imports has narrowed to

The following charts and analysis have been provided by our European Equity Strategy team; Sebastian Raedler et al.

USD47.4bn from USD51.7bn in Dec 2015 and USD56.8bn in Jan. Though smaller than previous months, the import discrepancy is still at an elevated level, especially considering that the total FX reserves decline was only USD28.6bn in Feb. This is an indication that the government might not have implemented effective policies to contain capital outflows through this channel.

Figure 252: High private sector leverage means China will have to keep an accommodative monetary policy

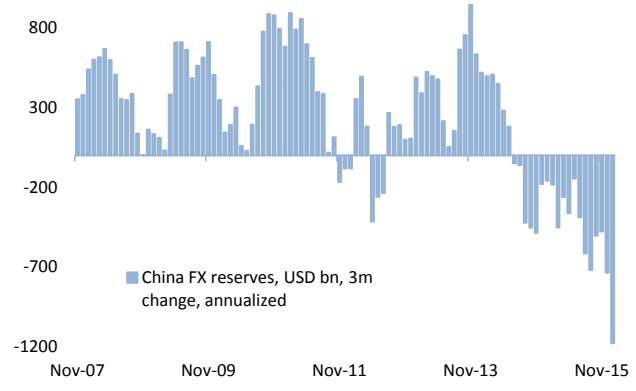


Source: Deutsche Bank, Bloomberg Finance LP

Figure 253: …which risks triggering further RMB devaluation

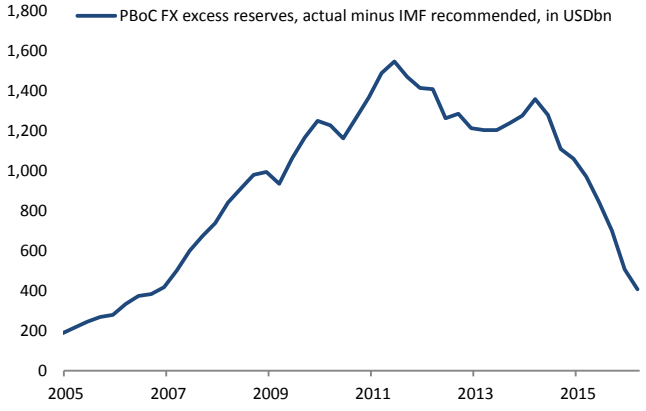
Source: Deutsche Bank, Bloomberg Finance LP

Figure 254: …which in turn would lead to further capital flight and a drawdown of FX reserves (currently at USD1tn on an annualized basis



Source: Deutsche Bank, Bloomberg Finance LP

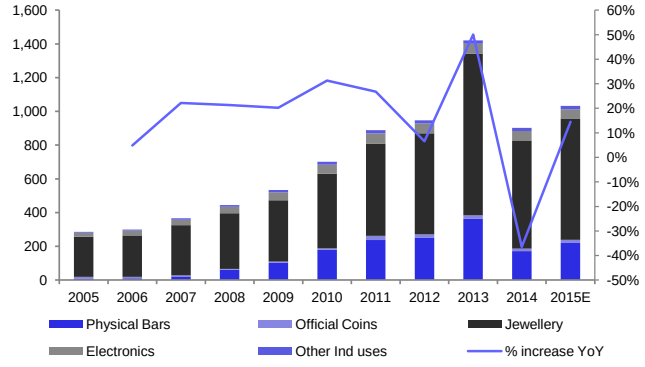
Figure 255: Using the IMF's methodology for reserve adequacy, China only has c.USD400bn of "free" reserves left, down from USD1.4tn in 2014



Source: Deutsche Bank, Bloomberg Finance LP

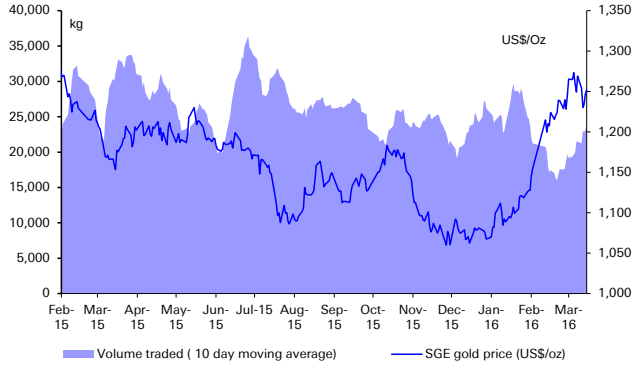
As a hedge against a weakening currency, we think Chinese gold demand will continue to increase, and whilst we do not forecast a repeat of 2013, physical demand could grow in the order of 10% or 100 tonnes. Chinese demand has increased by 14% CAGR since 2005. In the recent bout of RMB weakness we have seen increased trading volumes on the Shanghai Gold exchange, suggesting a higher propensity to buy gold as a hedge against a depreciating currency. Chinese buying remains tactical with the most activity occurring on the dips. We note that during the strong rally in gold, we had seen activity drop off on the SGE. More recently however, we have seen volumes pick up post Chinese New year.

Figure 256: The growth in Chinese gold demand



Source: Deutsche Bank, GFMS

Figure 257: Trading on the Shanghai Gold exchange (SGE) (10 day moving average)

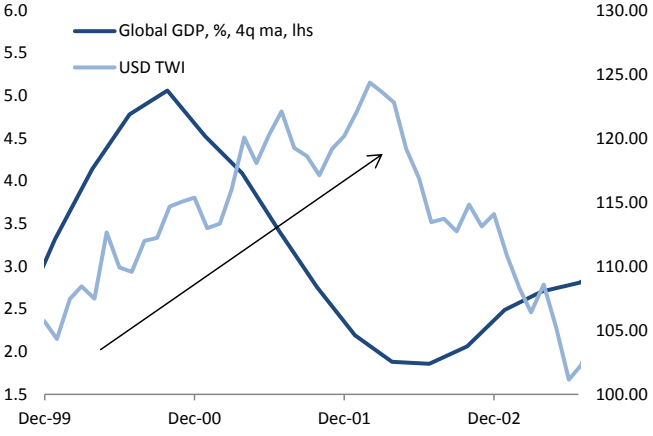


Source: Deutsche Bank, Bloomberg Finance LP, SGE

Gold holds its own in a US recession

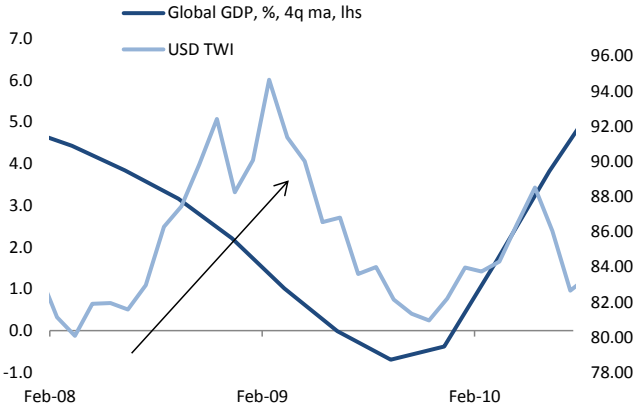
Although we are not as bearish on the US to suggest that the entire economy will lapse into a recession, there are certain manufacturing sectors that are in a recession. Assuming the worst case scenario where the US slips into a recession, dragging the global economy with it, the USD normally performs very well as investors search for safe havens and US investors repatriate funds onshore. Gold is normally inversely correlated to the USD, but under these conditions i.e. extreme risk aversion, gold also performs relatively well. We outline the performance of the USD in the past two global recessions.

Figure 258: The USD performance during the 2001/02 recession



Source: Deutsche Bank, DataStream

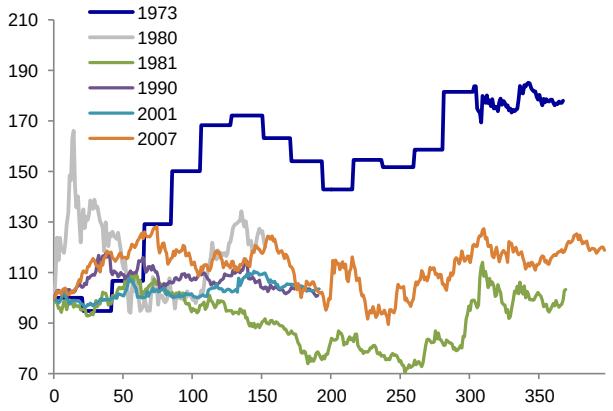
Figure 259: The USD performance during the 2008/09 recession



Source: Deutsche Bank, DataStream

The average performance of gold during the last six recessions was +21%, and if the 1973 oil shock recession is excluded, the average performance is +9%. The performance in the 81, 90 and 01 recessions is less than inspiring, so we would not build a bull case on gold based on a US recession, but the metal certainly remains defensive.

Figure 260: Gold's performance during US recessions



Source: Deutsche Bank, Bloomberg Finance LP

Figure 261: Gold tends to perform better in long recessions

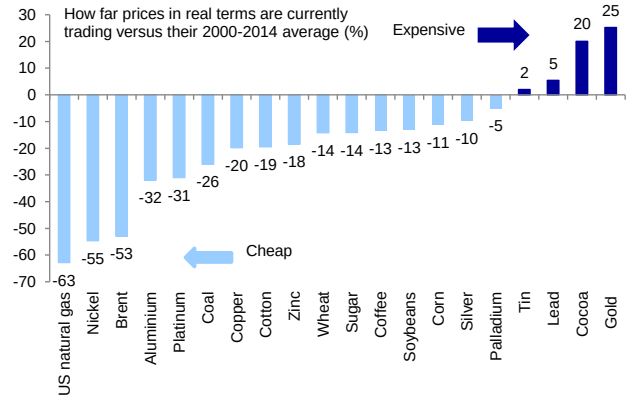
Start	End	Gold Start (USD/oz)	Gold End (USD/oz)	Gold change (%)	Duration (days)
Nov-73	Mar-75	100	178	78.0%	515
Jan-80	Jul-80	512	614	20.0%	212
Jul-81	Nov-82	422	436	3.3%	517
Jul-90	Mar-91	352	356	1.0%	273
Mar-01	Nov-01	266	275	3.5%	274
Dec-07	Jun-09	783	930	18.8%	577
			Average	**20.8%**	**395**

Source: Deutsche Bank

A word of caution: Seasonality and relative pricing

Given the rising risks to the global financial stability from 1) the rising risk of a corporate default cycle because of stressed US energy balance sheets, 2) China's capital flight crisis increasing the risk of a sharp one-off RMB devaluation and 3) weakening global growth momentum, buying some gold as "insurance" is warranted. However gold remains fundamentally expensive which means that investors need to be tactical, as to the levels at which gold is bought. Gold is already expensive versus many other commodities, and relative to a number of other metrics. Gold now ranks as the most expensive commodity relative to its 15 year trading history. We think the low interest rate environment in part justifies the fact that gold looks optically expensive.

Figure 262: Gold most richly valued commodity



Source: Deutsche Bank, Bloomberg Finance LP

Figure 263: Gold fair value falls with crude oil

	Oct-14	Jan-16
In real terms (PPI)	697	710
In real terms (CPI)	766	777
DB Global Asset Allocation model	1176	816
Relative to per capita income	661	719
Relative to the S&P500	945	855
Versus copper	1,145	766
Versus crude oil	1,462	516
Average	**979**	**737**

Source: Deutsche Bank

From a seasonal perspective, January and August are the strongest months for gold, with the first quarter being a generally strong period. Our partial explanation for this is that the US tends to have some jitters in the first quarter with weather related impacts and August tends to be the peak of Indian buying ahead of the wedding season. Seasonally however, the best is behind us, although we note that February 2016 has been one of the strongest in the past 10 years.

Figure 264: Gold's seasonal performance

% move	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5 Yr Avg (2011-2015)	3.21	-0.09	-0.94	0.42	-3.36	-1.26	1.39	5.24	-3.79	0.35	-2.2	-3.14
10 Yr Avg (2006-2015)	4.35	1.08	-1.03	1.46	-0.64	-1.13	0.94	2.23	0.25	0.1	2.2	-0.77
2016	5.38	10.77	1.24									

Source: Deutsche Bank, Bloomberg Finance LP

Gold supply demand balance

We outline our gold supply demand balance in the chart below: Although less of a driver given the ample above ground stocks, we think the gold market looks under-supplied in 2016E onwards.

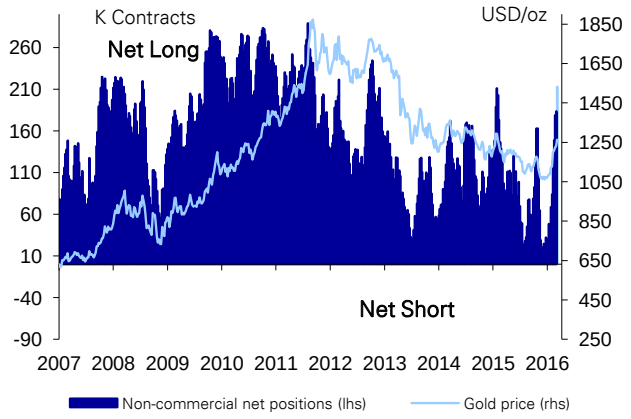
Figure 265: Deutsche Bank Gold supply – demand model

		2009	2010	2011	2012	2013	2014	2015E	2016E	2017E	2018E	2019E
Mine Production	tonnes	2,575	2,741	2,839	2,864	3,061	3,133	3,101	3,101	3,070	2,925	2,906
growth		*6.6%*	*6.4%*	*3.6%*	*0.9%*	*6.9%*	*2.4%*	*-1.0%*	*0.0%*	*-1.0%*	*-4.7%*	*-0.7%*
Producer Hedging	tonnes	-257	-106	11	-40	-39	103	-21	50	-25	150	100
Official Sector Sales	tonnes	34	0	0	0	0	0	0	0	0	0	0
Secondary Supply, Scrap	tonnes	1,695	1,711	1,649	1,591	1,287	1,125	1,035	1,126	1,155	1,230	1,231
growth		*28.8%*	*0.9%*	*-3.6%*	*-3.5%*	*-19.1%*	*-12.6%*	*-8.0%*	*8.8%*	*2.6%*	*6.5%*	*0.1%*
Total Supply	**tonnes**	**4,047**	**4,346**	**4,499**	**4,415**	**4,309**	**4,361**	**4,115**	**4,277**	**4,200**	**4,305**	**4,237**
Jewellery	tonnes	1,814	2,020	1,975	1,896	2,439	2,213	2,180	2,250	2,360	2,250	2,390
		-21.3%	*11.4%*	*-2.2%*	*-4.0%*	*28.6%*	*-9.3%*	*-1.5%*	*3.2%*	*4.9%*	*-4.7%*	*6.2%*
Industrial, other	tonnes	410	465	452	407	419	400	395	405	425	438	405
		-11.1%	*13.4%*	*-2.8%*	*-10.0%*	*2.9%*	*-4.5%*	*-1.3%*	*2.5%*	*5.0%*	*3.0%*	*-7.5%*
Total fabrication demand	tonnes	2,224	2,485	2,427	2,303	2,858	2,613	2,575	2,655	2,785	2,688	2,795
		-19.6%	*11.7%*	*-2.3%*	*-5.1%*	*24.1%*	*-8.6%*	*-1.5%*	*3.1%*	*4.9%*	*-3.5%*	*4.0%*
Bar & coin investment	t	791	1,218	1,519	1,289	1,775	1,079	1,163	1,186	1,222	1,258	1,293
ETF and similar	t	652	343	172	275	-969	-159	-133	120	100	50	50
Total investment demand	tonnes	1,443	1,561	1,691	1,564	806	920	1,030	1,306	1,322	1,308	1,343
growth		*21.3%*	*8.2%*	*8.3%*	*-7.5%*	*-48.5%*	*14.1%*	*12.0%*	*41.9%*	*28.3%*	*0.2%*	*1.6%*
Official Sector Purchase		0	77	457	544	409	466	450	450	480	400	380
OTC investment & stock flows		380	223	-76	4	236	362	60	-133	-387	-91	-281
Total Demand	**tonnes**	**4,047**	**4,346**	**4,499**	**4,415**	**4,309**	**4,361**	**4,115**	**4,277**	**4,200**	**4,305**	**4,237**
Gold bullion price	**USD/oz**	**974**	**1,225**	**1,576**	**1,669**	**1,411**	**1,266**	**1,161**	**1,188**	**1,231**	**1,275**	**1,317**

Source: Deutsche Bank, World Gold Council, GFMS

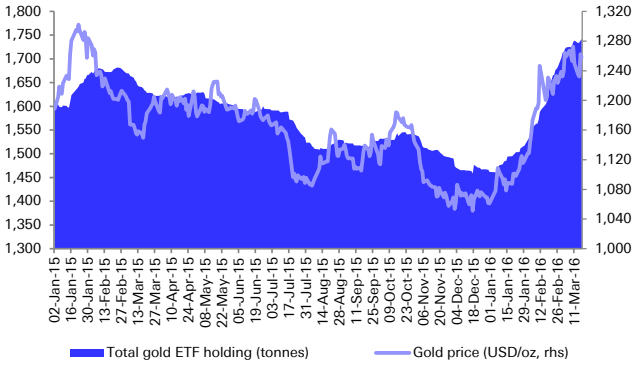
The ETF holdings in gold have increased by 19% (or 9Moz) since the beginning of the year, roughly in line with the price increase. We note that inflows have started to slow over the course of March. Net longs on the Comex have increased 16-fold since the beginning of December, and positioning now looks a little stretched.

Figure 266: Non commercial net positions on the Comex



Source: Deutsche Bank, CFTC, Reuters

Figure 267: Gold ETF holdings



Source: Deutsche Bank, Bloomberg Finance LP

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Platinum Group Metals

PGMs: A golden currency kicker

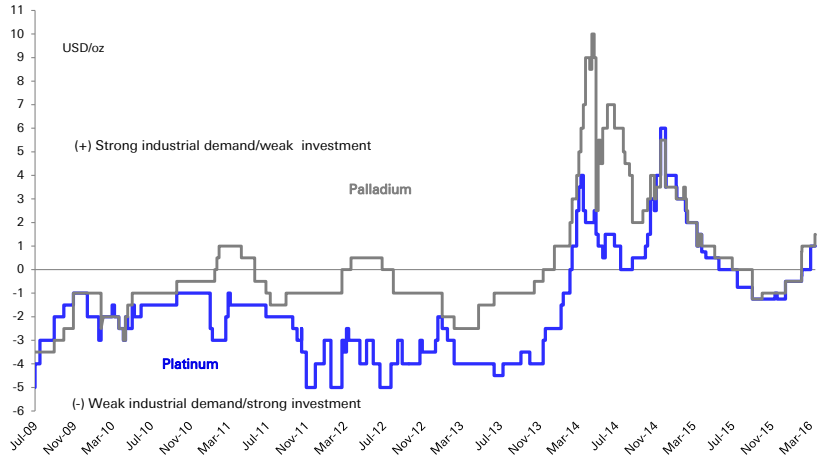
… but is it permanent?

- PGM prices have recovered since their mid January lows inspired mainly by a rally in gold and the Rand. The fundamentals for platinum have improved, but not to the extent that there will be significant deficits drawing down the ample liquid stocks. The fortunes of platinum remain inexorably linked to the Rand and a permanent price recovery is still dependent on SA producer discipline which is still limited. We therefore forecast a Rand basket price which tracks the 90th percentile of the South African cost curve.
- The supply demand fundamentals for platinum have improved modestly. The outlook for European and Indian passenger vehicle sales remains robust; Chinese buying and jewellery demand has recovered in Q4'15 and some supply from the Autocat recycling supply chain has been held back as prices fell. We think the withholding of supply will be temporary, but the improving fundamentals have been reflected in the tightening of the sponge – ingot spread which is now in positive territory for both platinum and palladium.
- We forecast a small deficit for platinum in 2016/17, and a decent deficit in palladium. Despite the better fundamental balance in palladium the plateauing of US Auto sales and the volatility of Chinese Auto sales has dampened investor enthusiasm for the metal, and remains a downside risk to our forecasts.
- The main driver in the PGM prices has been a recovery in gold prices and the Rand. The Rand has recovered post the recent interest rate hike, but we still think there are some further headwinds, which means the benefit may be temporary. Likewise gold has rallied as expectations of a Fed hike have diminished,. The options market is however pricing in a very low probability of a June rate hike, suggesting that there is little near term upside for gold. Investor interest in gold (as seen by ETF flows and long positioning on the Comex) has far outstripped that of the PGM's enforcing our view that the recent price recovery is driven more by non fundamental factors.
- At the moment, PGM supply "discipline" is being driven by necessity, and SA operations are being starved of capital. Monetizing developed reserves can only take you so far, and we can see a potential supply crunch coming in 2018/19, as some of the marginal producers will be forced to play catch up in sustaining capex.
- On fundamentals, palladium should be the clear favourite, but due to ample inventories, the metal tends to underperform when sentiment on China is weak. The positive credit momentum has not quite extended to the Auto sector, with China February Auto sales being slightly disappointing. We expect the credit cycle to continue at least in the short term, which should see palladium catch up to platinum in the near term.

Platinum: The market remains roughly balanced, with ample inventories

Both Platinum and Palladium prices have recovered in USD terms since their mid January lows; platinum by more than palladium. In our view this speaks to the recovery being driven mainly by a rally in gold and the Rand, but also a small positive change in the market fundamentals we outlined in 2016 Outlook, dated the 15th of December 2015. Some of the price stabilizers we mentioned in our 2016 Outlook entitled "Strikes and Cuts to the rescue?" are starting to kick in. Although not a perfect indicator, the sponge / ingot premiums for both metals have moved in favour of sponge, which suggests that Autocat / Industrial demand is tightening up.

Figure 268: Platinum and palladium sponge – ingot discount / premium



Source: Deutsche Bank, Mitsubishi Corporation

Platinum and Palladium have however underperformed sister metals gold and silver so far this year. As a recap, the catalysts we outlined for platinum specifically were:

- A strengthening Rand – the currency has recovered post the interest rate hike, but we still think there are some further headwinds, which means the benefit may be temporary in the short-term.
- The c.20% rally in gold prices since the beginning of the year, as expectations of a Fed hike has diminished, and an equity market sell-off has seen an increase in safe haven buying. There are two scenarios where we would see further upside to gold. The first is that the Fed relents completely and starts another round of QE; the second is a further significant sell off in equity markets driven by a credit default cycle in the US. Whilst the second scenario is more likely in our view, our base case for gold is little that there is little upside from here.
- Despite the outlook for global growth weakening, we have seen decent Auto sales momentum in the key platinum regions of Europe and India, although the outlook for heavy duty sales in China and the US is less encouraging. In Palladium, Chinese passenger vehicle sales have remained robust post the sales tax cut, but the US market is showing some signs of peaking. The short –term surge in PGM demand in order to "fix" post the dieselgate scandal is unlikely to materialize however.

- After being absent for most of 2015, the outlook for Chinese jewellery has improved modestly, and buying activity on the SGE has improved towards the end of the year. This is not enough to be a catalyst for price increases, merely a dampening of price declines.
- There has been some anecdotal evidence of certain portions of the supply chain holding back metal from Autocat recycling. We maintain our view that the withholding of scrap is temporary and ultimately returns to the market after a lag of a quarter or two. The weaker pricing outlook, especially in steel may however lower the trajectory of recycling in the medium term.

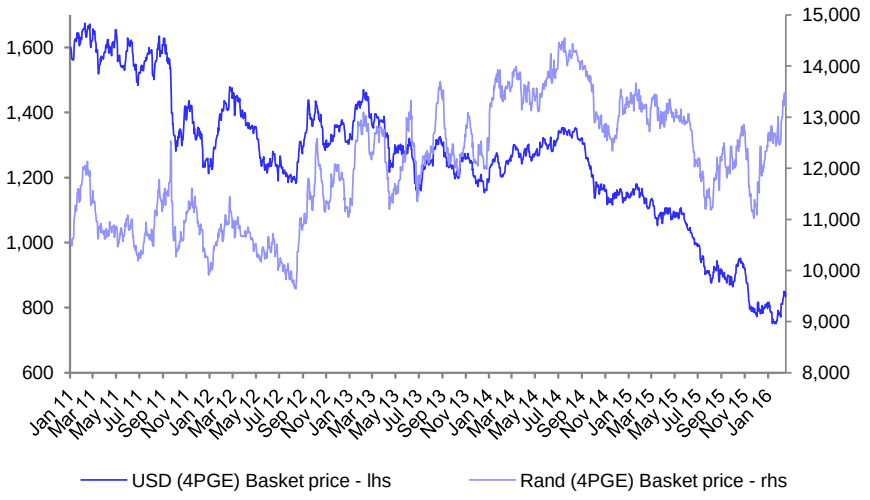
Our conclusion remains that a permanent price recovery (where the USD price rallies independently from the Rand), and producer margins actually expand is still dependent on SA producer discipline. At the moment, this supply "discipline" is being driven by necessity, and operations are being starved of capital. Monetizing developed reserves can only take you so far, and we can see a potential supply crunch coming in 2018 / 19, as some of the marginal producers will be forced to play catch up in sustaining capex. Balance sheets may however constrain their ability to do what is required. Until then we forecast a Rand basket price which we think tracks the 90th percentile (excluding sustaining capex) of the South African cost curve.

There are however three scenarios which could bring forward the 2018 supply crunch. The first is a consolidation and cut scenario, driven by Sibanye. Should Sibanye acquire Lonmin post the digestion of Rustenburg and Aquarius, the company would have some flexibility in cutting loss-making capacity. The second is an opportunistic closure of 14 shaft in the Lease area, post the fire and a closure of Union by Amplats instead of the current sale preference. The third and last is a long duration strike as we head into wage negotiations in the middle of this year. The relatively muted rhetoric from the major unions in South Africa suggests that the appetite for another long duration strike is fairly low.

Downgrading forecasts due to a weaker Rand and a flattening cost curve

Movements in the Rand and the platinum price have become inexorably intertwined, with weakness in the Rand simply translating into weaker USD metal prices.

Figure 269: Contrasting the USD basket price with the Rand basket price

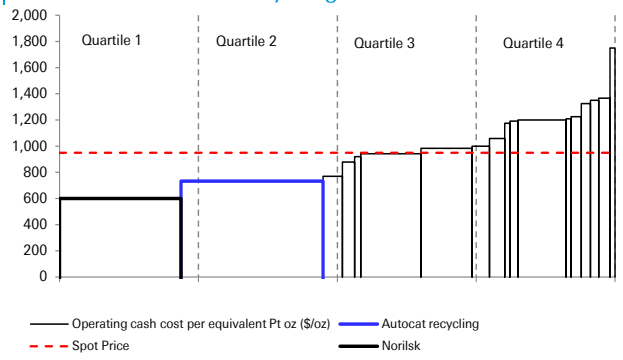


Source: Deutsche Bank, Bloomberg Finance LP

Since the beginning of 2011, the USD PGM basket price has halved whilst the Rand basket price is up 20% due to the weakness in the Rand

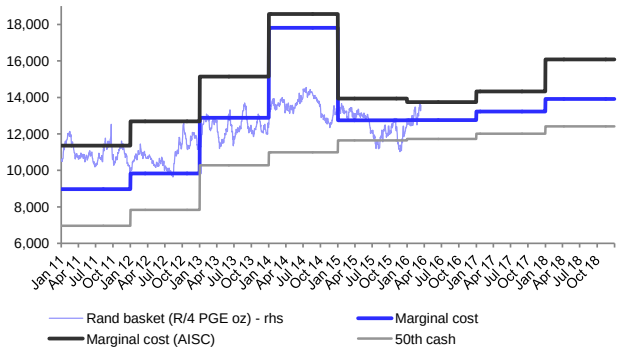
PGM Rand basket prices traded around the marginal cost (90th percentile including sustaining capex) in 2011, falling to the 90th percentile excluding sustaining capex for most of 2012 and 2013. The 90th percentile was for our purposes meaningless for most of 2014 due to the strikes at the start of the year. The loss of output meant that fixed costs had to be covered by less ounces. The marginal cost support level held for the first half of 2015, before prices plummeted to the 50th percentile, due to a combination of factors including a sharp drop off in Chinese car sales, a general sell off in commodities, the Diesel-gate scandal and the strong appreciation of the USD. Bouts of Rand weakness has seen prices bounce between the 50th and 90th percentile of the cost curve. A resurgent gold price in conjunction with a weaker USD, a recovery in Chinese vehicle sales (post the sales tax cut), South African supply disruptions and the abatement of the fall-out from Dieselgate has seen the Rand basket price trade closer to the 90th percentile once more. We think the platinum market will remain balanced at best, and therefore the Rand basket price is likely to continue trading around the 90th percentile for the next two years. It is only in 2018 that we forecast prices starting to bridge the gap back to the 90th percentile including sustaining capex.

Figure 270: Southern African PGM production relative to Norilsk and Autocat recycling



Source: Deutsche Bank, SFA Oxford

Figure 271: Southern African PGM cost progression



Source: Deutsche Bank, Company reports

A few key points with respect to the cost curves above:

- The Southern African PGM production occupies the third and fourth quartile of the cost curve. Norilsk's poly-metallic ore body is firmly in the first quartile, with attractive nickel and copper by-products in this context. Although the cost of production for recycled Autocats is perhaps not the correct description due to a fragmented supply chain with many participants taking a small clip on the way through. However, we think that Autocat recycling occupies the second quartile of the cost curve.
- The cost curve has flattened with the gap between the 50th and 90th percentile narrowing, as higher cost operations have been shut and the some of the surviving high cost producers have been forced to take out more costs than those producers with better margins.
- If we exclude the anomaly created by the strike in 2014, marginal costs in 2016 (and we think 2017) will only be marginally higher than in 2012. Marginal costs excluding sustaining capex remain pretty flat between 2013 and 2017E.
- The gap between marginal costs including and excluding capex has narrowed from 2014 onwards. We forecast sustaining capex to be cut to its lowest level in 2016, with a return to "normal" depending on the cashflow generation of the sector.

Using this methodology, and a weaker Rand assumptions (the rationale is outlined in the next section), we highlight our revised PGM price forecasts.

Figure 272: PGM price forecasts

USD/oz	2015E	2016E	2017E	2018E	2019E	2020E	2021E
New							
Platinum	1,056	940	890	1,030	1,250	1,390	1,450
Palladium	692	575	658	750	900	920	940
Rhodium	953	700	724	750	850	900	1,100
Rand	12.94	15.89	16.77	15.38	13.36	13.11	14.63
Rand basket (R/3PGM oz)	12,084	12,793	13,469	14,114	14,765	15,737	18,446
YoY increase		5.9%	5.3%	4.8%	4.6%	6.6%	17.2%
Prior							
Platinum	1,055	859	831	1,000	1,250	1,390	1,450
Palladium	692	575	658	750	900	920	940
Rhodium	953	698	724	750	850	900	1,100
Rand	12.94	17.19	17.77	15.83	13.34	13.08	14.52
Rand basket (R/3PGM oz)	12,080	13,001	13,643	14,250	14,747	15,701	18,297
YoY increase		7.6%	4.9%	4.5%	3.5%	6.5%	16.5%
% change							
Platinum	0%	9%	7%	3%	0%	0%	0%
Palladium	0%	0%	0%	0%	0%	0%	0%
Rhodium	0%	0%	0%	0%	0%	0%	0%
Rand	0%	-8%	-6%	-3%	0%	0%	1%
Rand basket (R/3PGM oz)	0%	-2%	-1%	-1%	0%	0%	1%

Source: Deutsche Bank

The Rand and gold have been the main catalysts so far…

The strong rise in the USD has abated in the short term, as has the depreciation of the Rand. However, our SA economist Danelee Masia continues to remain cautious on the outlook despite upgrading her forecasts. Her main reasons for caution are 1) the risks of the country losing its investment grade status are rising due to a deteriorating growth outlook. 2) The net contribution from trade is less positive than previously forecast, partially due to the ongoing drought and 3) China's higher tolerance for currency depreciation (vs dollar), downside risks to China's growth, together with ongoing dollar strength has more negative ramifications for commodity prices and the Rand.

- Revising the rand exchange rate to 16.50/USD (from 17.50USD) and 17.0/USD (from 18/USD). DB's recent review of its EUR/USD forecast to reach parity by year-end (from 0.90 initially) will lift some pressure off the rand. At the risk expressing a relatively bullish view compared to our previous forecasts, we have to highlight that risks to the rand remain firmly stacked against ongoing appreciation, due to the pressure to reform. The relapse in political conditions may also tarnish the goodwill built up by the National Treasury's collaborative investor roadshow with business and union leaders.

How long will the golden tailwind last?

Safe haven buying of gold both in Asia and in the West, has seen prices rally nearly 20% since the beginning of the year. We think the gold market is starting to price in a much more benign rate rise profile versus Fed guidance. Furthermore the first quarter is normally gold's strongest quarter from a seasonal perspective. Although gold may be a bit more resilient versus our forecasts, we struggle to see further upside above spot (USD1,253/oz at the

time of writing. Gold has already begun to price in a limited Fed response for the rest of the year in our view. So unless we believe that the Fed starts loosening monetary policy once more, the gain from gold is likely to be capped.

From a seasonal perspective, January and August are the strongest months for gold, with the first quarter being a generally strong period. Our partial explanation for this is that the US tends to have some jitters in the first quarter with weather related impacts and August tends to be the peak of Indian buying ahead of the wedding season. Seasonally however, the best is behind us.

Figure 273: Gold's seasonal performance

% move	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5 Yr Avg (2011-2015)	3.21	-0.09	-0.94	0.42	-3.36	-1.26	1.39	5.24	-3.79	0.35	-2.2	-3.14
10 Yr Avg (2006-2015)	4.35	1.08	-1.03	1.46	-0.64	-1.13	0.94	2.23	0.25	0.1	2.2	-0.77
2016	5.38	10.77	1.24									

Source: Deutsche Bank, Bloomberg Finance LP

A mixed demand picture for Auto's: Europe and India are the bright spots

We forecast global vehicle sales to increase by 3.9% in 2016, an improvement over 2015, where we estimate the global sales growth was roughly 1%. The growth is driven by a recovery in both Europe (albeit at a slower rate than 2015) and China, driven by the sales tax cut. This regional growth mix is positive for both platinum and palladium in broad terms, with a qualitative summary in the table below:

Figure 274: The drivers of PGM Autocat demand

Region	Platinum	Palladium	Rhodium	Comments
Global passenger vehicle sales	+	+	+	Increasing sales (+4%) versus 1% in 2015E
European passenger vehicle sales	++	+	+	Continued recovery in vehicle sales (3 - 4%), albeit at a slower pace than in 2015
Chinese passenger vehicle sales	Neutral	++	Neutral	A recovery in Chinese PV sales (7 - 8%) post the sales tax cut
US passenger vehicles sales	Neutral	-	-	A peak in US passenger vehicle sales for 2016/17E with some downside risks
Indian passenger vehicles sales	+	+	Neutral	A continued recovery in Indian passenger vehicles sales (+10%) with an increasing market share from CUV's
Heavy Duty Diesel sales	-	Neutral	Neutral	A weak US and EM offset by Europe and India
European diesel market share	-	+	Neutral	The diesel market share is likely to decline to c.40% by the end of the decade. This level is now largely consensus
Rising battery vehicle market share	-	-	-	Battery vehicles (all types) are forecast to rise to +20 million vehicles by 2025
Tightening emission legislation	Neutral	Neutral	Neutral	Limited new legislation being implemented in 2016/17
A switch to SCR's from NOx technology	-	-	--	Real-world driving emissions will lead to the adoption of a low PGM solution

Source: Deutsche Bank

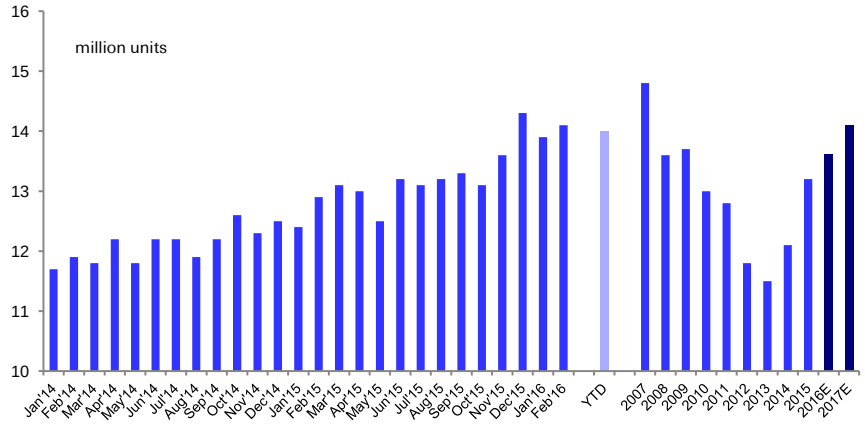
Europe continues to recover

The demand outlook from the Autocat sector is mixed. Our European Auto team (Gatean Toulemonde, Tim Rokossa et al) continues to forecast another positive year in **European Auto sales**, up 3% year on year. This is down from the near 9% growth seen in 2015. We believe the European auto sector will see the same positive factors in '16 as it did in '15 although to a lesser extent - precisely, a further European recovery (50% of sector revenues) as well as a weaker currency (versus USD, JPY & RMB). Despite entering the 7th global up year, existing risks mainly in EMs/China and peaking demand in the US, tempers our positive view slightly. We anticipate Western Europe sales to

reach 13.6mn units, +4% YoY in 2016. This is 7% below the pre-crisis volumes (14.6mn for the average 1997-2007) and 4% below replacement demand (14.2mn, DBe). Our Auto team anticipates growth to come from Italy (+8%e), Spain +6% thanks to the maintenance of Pive 8 (both countries are still significantly below pre-crisis level), France, +5%e, and Germany, +5%e, while UK should be only seeing broadly stable volumes off a very high base. February was another strong month, up 14% to 14.1m / year, well above the team's expectation of 13.6mn.

We still observe falling used car volumes and rising used car prices as well as stable new car incentives in major European markets. This bodes well for demand.

Figure 275: Western European SAAR by month



Source: Deutsche Bank, ACEA

Positive growth expectations for Europe

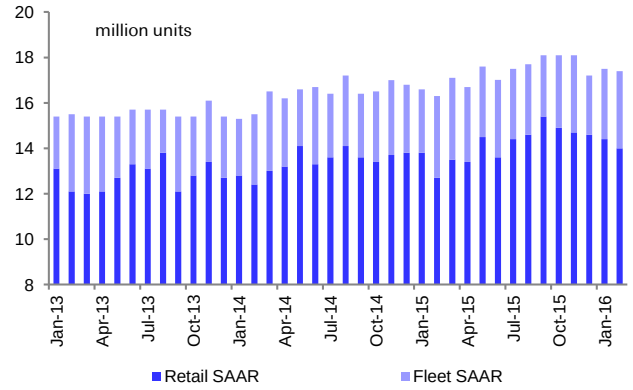
European production should show a more moderate growth of +3%, comparable to registrations (+4%e).

The continuing implementation of Euro 6b and ultimately 6c (real world driving conditions), should be positive for PGM loadings. However there are competing technologies such as SCR's which are a low PGM solution. We outline our key takeaways from the recent Johnson Matthey investor day in a separate section.

US auto outlook – plateauing demand

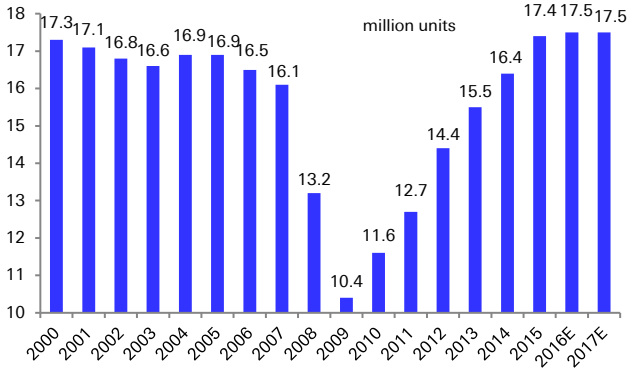
U.S. light vehicle sales annualized at 17.4 MM in February, which was a bit higher than our US Auto team's (Rod Lache et al) 17.2 MM estimate, but nonetheless consistent with our expectation of a plateauing U.S. SAAR. The U.S. Auto market's momentum appears to be moderating, which likely leaves the Industry somewhat less resilient in the face of potential headwinds, including moderating U.S. economic growth, rising new car prices (largely regulation driven), moderating trade-in values, and/or less accommodative credit conditions. In particular, it appears that upside versus consensus estimates was largely driven by higher fleet sales.

Figure 276: Annual light vehicle sales and forecast



Source: Deutsche Bank, Wards

Figure 277: Monthly SAAR : Fleet and retail



Source: Deutsche Bank, Wards

With sales growth potentially moderating we are increasingly focused on industry pricing, and leading indicators of pricing such as inventories and used vehicle pricing trends. Based on JD Power PIN data we estimate that Industry incentives are up $212 yoy. Incentives on small and midsized cars are up $807 and $561 yoy, which is significant. Trends in the used vehicle market for passenger cars have been similarly soft, with small car prices down >7% yoy, full sized cars down 14%, and mid-cars were roughly flat yoy. Passenger car inventories remain elevated throughout the industry (74DSO for small cars for the market), and we've noted that they are particularly high at Ford (small cars at 138 days) and Chrysler (131 days). GM appears to be more in-line with the market at 77 days supply for small cars. While light truck sales currently account for around ~60% of the U.S. market, it's important to recognize that the mix of trade-ins reflects the mix of vehicles from 5-6 years ago so the depreciation of pass cars is likely to have a somewhat higher impact on new vehicle affordability. The typical downturn scenario in the US Auto industry is a 20% decline in sales taking volumes down to c.14 MM. This is not in our base case PGM demand estimates, but clearly represents a downside risk scenario.

China Auto outlook: Strong growth to continue on tax stimulus

December's passenger vehicle (PV) sales were 2.4m units, implying a YoY growth rate of 18.3% (10.9% MoM). By segment, SUV sales stayed strong (up by 60.7% YoY and accounting for 33% of China PV sales) and local brands' performance benefitted with their SUV sales making up 54% of the total December SUV sales. For 2015, China PV wholesale grew by 7.3% YoY to 21.1m units, higher than our estimate of 5.0%. Regarding the impact of the sub-1.6L PVs' 5ppt partial purchase tax cut, the policy led to 10.4% YoY wholesale growth in the year for that segment to 14.5m units, reflecting the effectiveness of the policy. In comparison, above-1.6L PV wholesales went up by 1.2% YoY in FY15, on our China Auto team's (Vincent Ha et al) estimates.

December's auto wholesale rebound was stronger than our expectations, on a few key new SUV launches and the policy stimulus. For 2016, CAAM estimates that PV market will expand by 7.8% YoY, which is in line with our growth forecast, to 22.8m units, with continuous faster growth in SUV segment (up 36% YoY) offsetting the decline in sedan (down 5% YoY). In addition, the association expects sales of new energy vehicles (NEV) to exceed 700k units this year, implying more than 1.1x YoY growth. That being said, we still foresee milder long-term growth due to likely higher sales base amid pull-forward demand. Our trend growth is 4% per annum from 2017E onwards, with growth In Western China overtaking that of Southern China. The Chinese

market has seen a clear trend of trading up as evinced by 1) luxury brand cars outgrowing overall passenger car sales; 2) strong growth in SUV segment, and 3) higher growth in larger segment and higher priced vehicles. We believe that the upgrade trend will last over the next few years, driven by Chinese consumers' increasing purchasing power. This is a positive trend for PGM consumption.

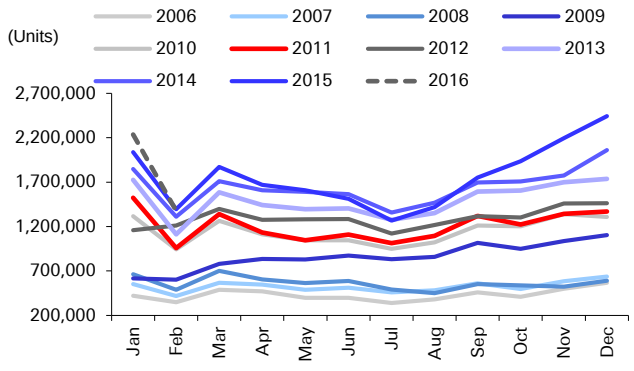
The weak sales in 2Q-3Q15 can be attributed to 1) the slowdown of macro economy, 2) fluctuation in the stock market leading to auto purchase deferrals, and 3) dissipation of panic-buying starting late 2014 due to purchase restriction worries. Meanwhile, 4Q15 sales growth benefited from government's purchase tax cut on small engine cars. Without the stimulus, the estimate is for a 4Q15 volume growth of 4% YoY.

After a disappointing 2014, China's heavy-duty truck (HDT) sales continued to record a double-digit 28.3% YoY decline in January-October to 454,005 units (vs. a 3.9% decrease in 2014). For the full year, we expect HDT sales to decline 27.4% YoY to 540,000 units. We think that the weak HDT sales YTD could be attributable to: 1) a lukewarm macroeconomic backdrop in China; 2) a slowdown in FAI growth, such as infrastructure investment and real estate investment; and 3) sluggish export and highway freight turnover. In addition, the aforementioned factors have also suppressed upgrade demand amid a sluggish economy, despite government policy support.

In aggregate CV (commercial vehicle) sales momentum was weak in 2015, with an 11% YoY sales decrease in trucks (2014: 8.9% drop) and a milder 3% decline in bus sales (2014: 8.4% growth). This brings the total sales decline down to negative 10% year on year.

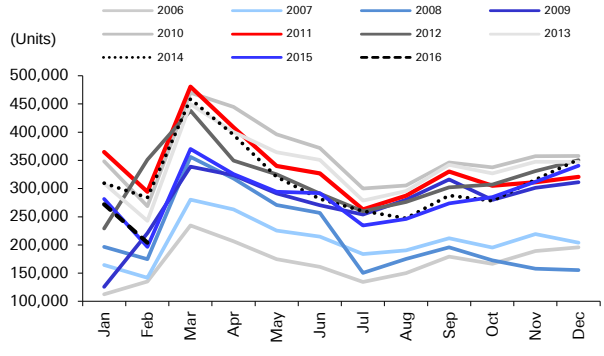
The CAAM vehicle wholesale data suggests that February passenger vehicle (PV) sales were 1.4m units, implying a YoY decline rate of 1.5% (-38.5% MoM) due to Chinese New Year calendar shift. For 2M16, China PV wholesale grew by 5.1% YoY to 3.6m units. By segment, SUV sales stayed strong in 2M16 (up by 54.8% YoY and accounting for 35% of China PV sales) and local brands' performance benefited with their SUV sales making up 60% of total SUV sales.

Figure 278: China passenger vehicle sales – a strong finish to the year



Source: Deutsche Bank, CAAM

Figure 279: China commercial vehicle sales – lagging behind due to limited FAI so far



Source: Deutsche Bank, CAAM

Remaining bullish on Indian Auto growth

The major product launches during the Indian Auto Expo 2016 reiterated our Indian Auto team's (Amyn Pirani et al) belief that the CUV segment is likely to outperform the industry in the medium term. Mahindra, Maruti and Hyundai have launched four CUVs in the last 6 months. Passenger vehicle demand went through a prolonged downturn during FY12-14 due to a combination of high inflation, high interest rates and continuously increasing fuel prices. We note that all these factors have eased in the past 12 months, leading to a mild recovery in FY15 (+4%) and 9MFY16 (+9%). We believe that stable inflation and fuel price trends along with a pick-up in the general economic environment should aid demand revival over FY16-17. In 2HFY17 and FY18E, there could be additional support from the expected increase in the salaries of government employees on account of the roll-out of the recommendations of the 7th Pay Commission.

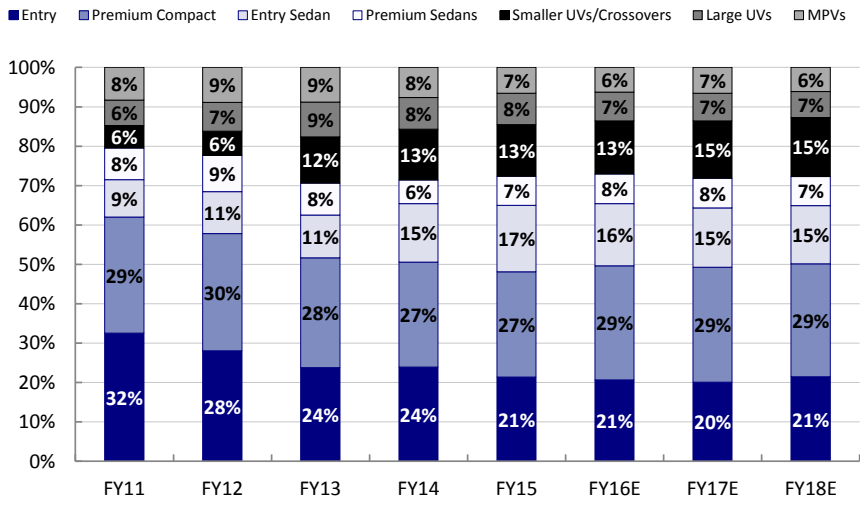
Figure 280: Passenger vehicle industry snapshot and forecasts

	FY11	FY12	FY13	FY14	FY15	FY16E	FY17E	FY18E
Entry compact	813,431	734,004	635,150	597,713	554,166	581,874	651,699	814,624
YoY%	*25.9%*	*-9.8%*	*-13.5%*	*-5.9%*	*-7.3%*	*5.0%*	*12.0%*	*25.0%*
Premium compact	738,920	779,930	747,076	666,754	691,812	816,338	946,952	1,088,995
YoY%	*35.7%*	*5.5%*	*-4.2%*	*-10.8%*	*3.8%*	*18.0%*	*16.0%*	*15.0%*
Entry Sedan	237,495	279,218	291,169	372,750	436,789	445,525	490,077	563,589
YoY%	*37.3%*	*17.6%*	*4.3%*	*28.0%*	*17.2%*	*2.0%*	*10.0%*	*15.0%*
Premium Sedan	201,600	239,726	217,587	149,282	193,097	212,407	244,268	280,908
YoY%	*23.9%*	*18.9%*	*-9.2%*	*-31.4%*	*29.4%*	*10.0%*	*15.0%*	*15.0%*
Cars	**1,991,446**	**2,032,878**	**1,890,982**	**1,786,499**	**1,875,864**	**2,056,144**	**2,332,996**	**2,748,116**
YoY%	***30.5%***	***2.1%***	***-7.0%***	***-5.5%***	***5.0%***	***9.6%***	***13.5%***	***17.8%***
Smaller UVs	143,186	162,525	313,530	322,838	338,413	379,023	473,778	568,534
YoY%	*13.8%*	*13.5%*	*92.9%*	*3.0%*	*4.8%*	*12.0%*	*25.0%*	*20.0%*
Larger UVs	161,457	190,618	236,470	202,742	206,695	206,695	227,365	250,101
YoY%	*25.0%*	*18.1%*	*24.1%*	*-14.3%*	*1.9%*	*0.0%*	*10.0%*	*10.0%*
UVs	**304,643**	**353,143**	**550,000**	**525,580**	**545,108**	**585,718**	**701,143**	**818,635**
YoY%	***19.5%***	***15.9%***	***55.7%***	***-4.4%***	***3.7%***	***7.4%***	***19.7%***	***16.8%***
MPVs	209,226	233,687	237,196	191,433	171,386	178,241	213,890	235,279
YoY%	*39.2%*	*11.7%*	*1.5%*	*-19.3%*	*-10.5%*	*4.0%*	*20.0%*	*10.0%*
UVs/MPVs	**513,869**	**586,830**	**787,196**	**717,013**	**716,494**	**763,959**	**915,032**	**1,053,913**
YoY%	***26.8%***	***14.2%***	***34.1%***	***-8.9%***	***-0.1%***	***6.6%***	***19.8%***	***15.2%***
Passenger vehicles	**2,505,315**	**2,619,708**	**2,678,178**	**2,503,512**	**2,592,358**	**2,820,103**	**3,248,029**	**3,802,029**
YoY%	***29.7%***	***4.6%***	***2.2%***	***-6.5%***	***3.5%***	***8.8%***	***15.2%***	***17.1%***

Source: Society of Indian Automobile Manufacturers (SIAM), Deutsche Bank estimates

Our Indian Auto team expects sharp growth in the small UV/crossover segment, driven by a change in customer preferences and a significant number of launches in this segment by various OEMs. The share of small UVs has already been rising within the overall UV segment and as a part of the overall passenger vehicle volumes. They expect this trend to continue and forecast a 22% CAGR (FY16-18E). The growth in this segment could come at the cost of the premium hatchbacks and entry sedans, which could underperform industry growth in the medium term.

Figure 281: India PV – Segment-wise market share



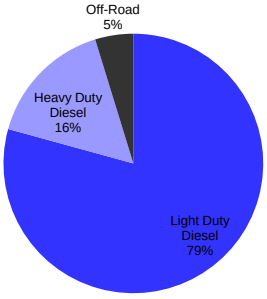
Source: Deutsche Bank, Industry data

Heavy Duty Outlook: Europe and India are the only bright spots

Our Auto team (Tim Rokossa and Patrick Nolan et al) estimate that heavy trucks in the three major markets (NA, EU, and Brazil) will grow by a mere of 1% in 2015. For 2016, we expect a downturn of -6% mainly driven by a severe demand slump in North America (DBe: -16% in 2016). Decreasing shipping rates as well as volumes imply declining orders, inventory levels are already comparatively high and pricing will likely be negative. We note, however, that our estimated demand of 270k units would still represent the fourth best year since the peak for class 8 trucks in NA. Still, the American downturn cannot be off-set by the solid 5% growth we expect to see in Europe. After truck demand in Brazil halved in 2015 (DBe: -51% in 2015), we believe another weak year with commodity prices remaining low and shrinking GDP will follow. Due to the very small size of the remaining base, we forecast a flat market for 2016. According to channel checks, our estimates are largely in line with the industry view. This is demonstrated by Figure 284which shows the LMC, Volvo and Paccar forecasts. We note, however, that they are slightly less bearish with respect to the NA market.

For 2017, we expect another -3% for the major regions. In our view, the downturn in NA will become less pronounced (DBe: -9% for 2017) and Europe will likely grow (DBe: 2% for 2017). We also believe Brazil offers some growth potential once economic growth accelerates (DBe: +10% for 2017).

Figure 282: Gross Autocat platinum demand by sector 2016E



Source: Deutsche Bank

Figure 283: DB estimates for major truck markets heavy trucks

Year end December	2009	2010	2011	2012	2013	2014	2015E	2016E	2017E
North America	126	153	242	273	249	290	320	270	245
Europe	164	177	240	219	236	225	251	264	268
Brazil	67	110	111	87	104	93	45	45	50
Major markets	**357**	**441**	**594**	**579**	**589**	**608**	**616**	**579**	**563**
y/y growth rates									
North America		21%	58%	13%	-9%	16%	10%	-16%	-9%
Europe		8%	35%	-9%	8%	-5%	11%	5%	2%
Brazil		64%	1%	-22%	19%	-11%	-51%	0%	10%
Major markets		**23%**	**35%**	**-3%**	**2%**	**3%**	**1%**	**-6%**	**-3%**

Source: Deutsche Bank, industry data

Figure 284: DB estimates for major truck markets >6t

Year end December	2009	2010	2011	2012	2013	2014	2015E	2016E	2017E
North America	235	274	396	450	437	502	535	497	484
Europe	220	233	302	275	292	271	306	322	327
Brazil	107	162	165	132	149	127	62	62	68
Major markets	**562**	**668**	**863**	**857**	**878**	**901**	**903**	**881**	**879**
y/y growth rates									
North America		17%	45%	14%	-3%	15%	7%	-7%	-3%
Europe		6%	30%	-9%	6%	-7%	13%	5%	2%
Brazil		51%	2%	-20%	13%	-15%	-51%	0%	10%
Major markets		**19%**	**29%**	**-1%**	**3%**	**3%**	**0%**	**-3%**	**0%**

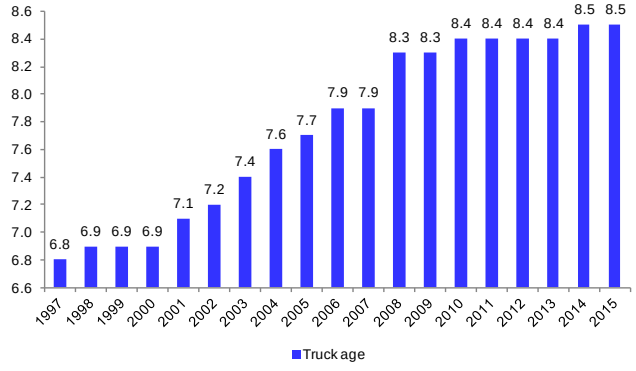
Source: Deutsche Bank, industry data

In India, heavy duty trucks remained strong with light trucks showing some initial signs of recovery. Domestic medium and heavy commercial vehicle (MHCV) volume for January 2016 remained strong and has grown by an estimated (DBe) 35% YoY to 29K units. YTD growth at 30% YoY is running above our FY16 forecast of 22% growth. Our FY16 forecast implies a monthly run-rate (MRR) of 23,569 units over the next 2 months vs YTD MRR of 23,642 units. Light commercial vehicles (LCV) appear to be showing initial signs of a cyclical upturn and grew by an estimated (DBe) 10% YoY to 34,157 units in January 2016 (2nd consecutive month of YoY growth). YTD growth for the segment (-3% YoY) is running in line with our FY16 forecast of -2% YoY. Our FY16 forecast implies a monthly run-rate (MRR) of 34,555 units over the next 2 months vs YTD MRR of 30,669 units.

European trucks are old, incentives to buy new trucks are high and freight forwarders have more money in the pocket

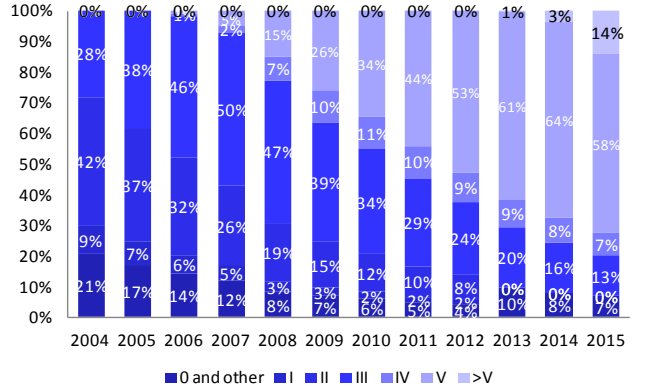
We see truck age as an indicator for the need of replacing vehicles. In 2014, the truck age remained at a very high level with an average of 8.5 years. We use German data to extrapolate noting that the German fleet accounts for about 20% of the European fleet. We note that financial incentives from tightening emission standards that relate to the engine type operated make new models even more attractive. Toll rates are related to the engine type and Euro 5 and Euro 6 compliant vehicles are billed less. Around 6% of the TCO are made up by toll in Western Europe. As shown below the Euro 6 share increased strongly within the last year, however, close to 30% of the Truck operated still run on engines below Euro 5.

Figure 285: Truck age remains on historic high levels



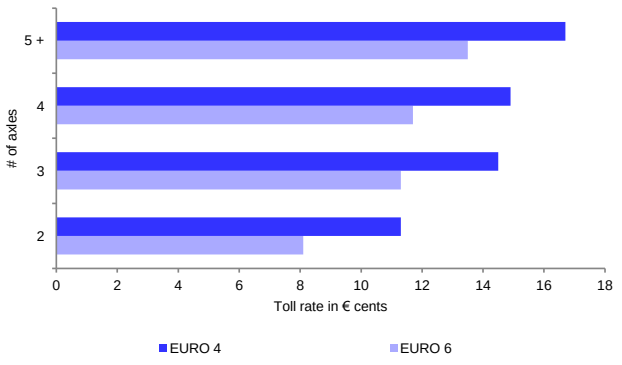
*Source: Deutsche Bank, KBA, *adjusted by 0.4 years due to statistical changes since 2008*

Figure 286:..and <Euro V share still at close to 30%



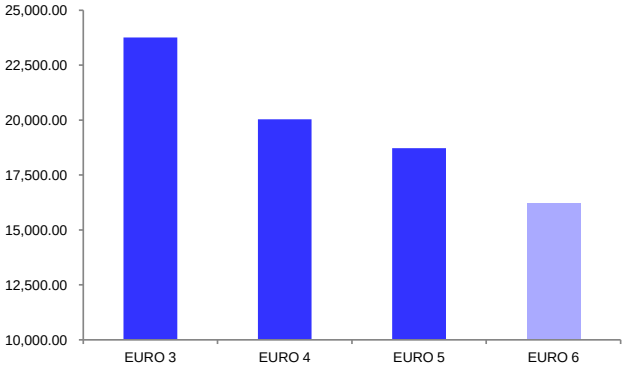
Source: Deutsche Bank, KBA

Figure 287: Toll rates per kilometer by emission class



Source: Deutsche Bank, Toll Collect

Figure 288: ~2,500€ savings in toll fees for a Euro 6 truck vs. Euro 5 in max case

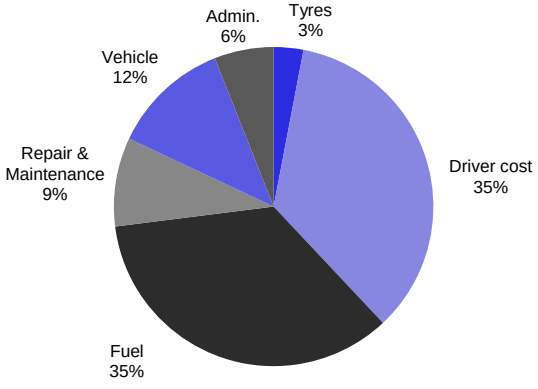


Source: Deutsche Bank, Toll Collect; We assume 120,000km driven p.a on a German highway & trucks with 5 axles or more.

For the first time in several years, freight forwarders had a proper incentive to replace old vehicles because the toll was lower for new ones. Figure 288 shows that toll payments for a truck complying with Euro 6 norms is almost 2,500€ or 15% less than the fee due for a Euro 5 truck. Note that we assume 120,000km average distance driven per year and a truck with 5 or more axels. However, as indicated by Figure 287 the difference between toll fees for trucks of different Euro categories is of similar magnitude irrespective of the number of axels. Hence, we expect an ongoing shift towards Euro 6 trucks across all truck sizes that should support demand.

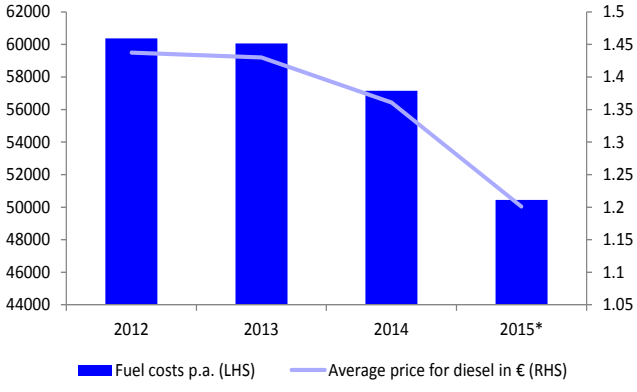
Even more important, the lower fuel price also gave them the means to do it. Fuel is still more than 10% cheaper than it used to be during 2014. Hence, we estimate that with an average of 120,000km driven a year and a fuel consumption of 35l/100km a freight forwarder could have saved almost €7k in fuel costs in 2015. Given that fuel accounts for 35% of TCO and that the savings equal roughly 3 monthly salaries of the driver, this is a considerable cost reduction.

Figure 289: TCO – fuel is 35% of total costs to operate a truck…



Source: Deutsche Bank

Figure 290: ...and as it is still much cheaper it results in estimated savings of almost €7k per annum



Source: Deutsche Bank, Eurotransport, European Commission; We assume 120,000km driven p.a with an average fuel consumption of 35l/100km.*9M average for diesel price

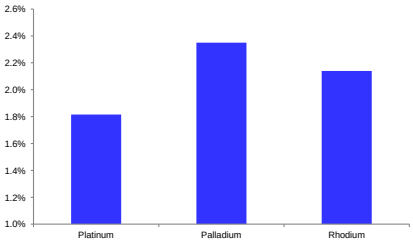
In summary, we believe to see 5% growth of the European truck market in 2016 as truck age remained at a high level, the market is still 20% off its peak

and replacing older trucks by Euro 6 trucks has a cost saving potential in toll fees. Lower fuel prices in 2015 should have provided means to do so. As IP growth is expected to be flat and freight growth to be a mere of 0.3% in 2016, we believe to see a flattening out and forecast only 1.5% growth in 2017.

Johnson Matthey Investor Day: Key read across for PGM demand

Our key takeaway from the Johnson Matthey's "Evolving Powertrain" investor day for Auto's is that PGM's will remain an integral part of the solution to emission abatement over the next ten years. However, the company's outlook confirms our view that demand growth will be modest, and is now more dependent on decent (+2%) global vehicle sales growth. Tightening emissions legislation will continue keep the pressure on higher PGM loadings, especially with many emerging markets such as China and India playing catch up on the legislation. However, the tighter emission legislation will be offset by an increase in the Battery vehicle penetration, and the use of alternative technologies such as selective catalytic reduction (SCR's) and engine management systems to reduce emissions. In our assessment, the global Auto trends continue to favour palladium, over platinum and lastly rhodium. The recent bearish sentiment towards the Autocat demand trends are however overdone in our view.

Figure 291: Autocat PGM demand growth (CAGR 2015 – 2020E)



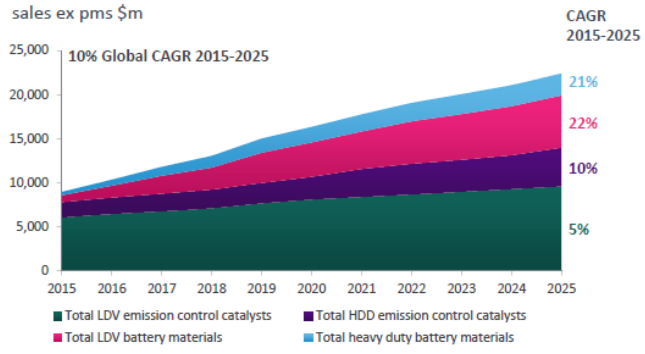
Source: Deutsche Bank

This contribution is kindly provided by Martin Dunwoodie from our European Chemical team

JMAT's should continue to benefit from its traditional emissions control markets in light and heavy duty as emissions legislation continues to tighten. However, they are also developing a business to capitalize on the opportunities provided by the trend to electrification of powertrains. The effort and focus JMAT are applying to the Electric vehicle market clearly highlights that hybrid and pure battery vehicles will take some market share from the traditional internal combustion engines. According to JMAT, diesel is not dead, and will continue to be an integral part of the mix to meet C02 targets, and that diesel penetration will decline down to 40% from slightly above 50% by the end of the decade.

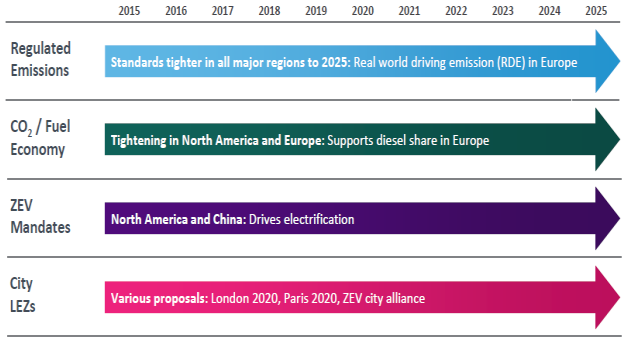
Forecasts for how powertains may develop are shown in Figure 292.

Figure 292: Market Outlook for Powertrain Technologies



Source: Johnson Matthey

Figure 293: Legislations continues to tighten

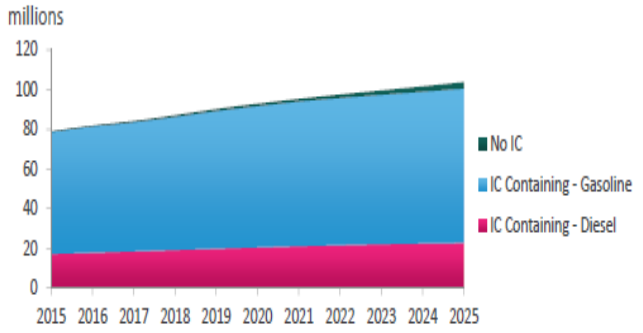


Source: Johnson Matthey

- Gasoline and diesel ICE are expected to remain major components of the powertrain to with around 97% of light duty automotives continuing to have either a gasoline or diesel engine by 2025. We also note diesel engines are a key in meeting the CO2 emission targets and also provide higher fuel efficiency. Whilst diesel is getting cleaner as

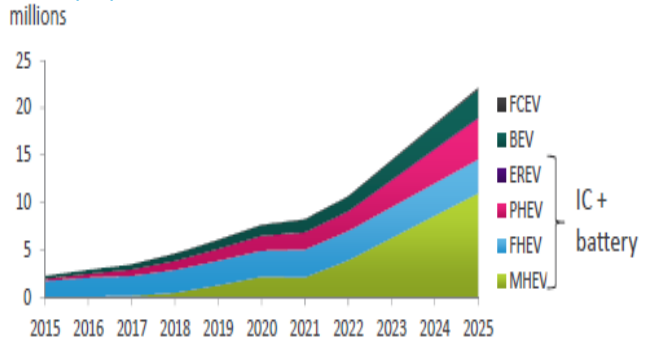
emissions standards advance, management repeated its expectation that market share in Europe will trend down from around 50% currently to low 40's by 2025, but still remaining a key part of the powertrain mix. The global light duty auto catalyst market is expected to reach $9bn by 2025 from $6bn in 2015.

Figure 294: Gasoline and diesel ICE to remain major technologies…



Source: Johnson Matthey

Figure 295: …but electrification will also increase steadily by 2025



Source: Johnson Matthey

- In HDD diesel is expected to remain the main technology with increased demand for catalysts driven by tightening legislations and focus on creating low emission zones in cities. The global HDD catalyst market is expected to reach $4bn by 2025 from $1.75bn in 2015. In total the growth in light duty and heavy duty equates to a group EBIT CAGR of nearly 4% alone to 2025 from the traditional emissions control business. JMAT's forecast EBIT growth is higher than our PGM demand growth of 1.8 – 2.4%. The complexity of the emission abatement systems will in our view offset the need to necessarily increase the PGM loadings, which is where JMAT will generate its EBIT growth from.

The light duty catalyst market continues to benefit from tightening legislation globally and is expected to grow from $6bn in 2015 to $9bn in 2025. Legislation that should benefit includes Euro 6c from 2017, real world driving emissions also from 2017 and beyond this Euro 7.

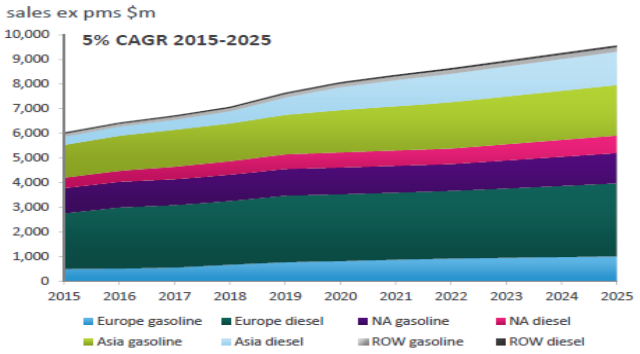
Global vehicle production sets a base line for automotive catalysts markets and over the time autocatalysts tend to grow 2-3% above auto production because of an increasingly complex catalyst systems whenever there is a legislation change to lower emissions of certain gases or pollutants. In Europe we expect some residual benefits from Euro 6b legislation in relation to diesel vehicles (an extra c.20% in catalyst sales value for JMAT) with the next step being implementation of Euro 6c from September 2017, which will double the value per vehicle on some gasoline direct injection engines (GDI), c.25% of gasoline vehicles initially and c.50% by 2021. China is also likely to see increased demand for auto catalysts with China 5 legislation coming in force around 2018 (filter fitment on light duty diesel vehicles across the whole of China), and tighter legislation in large cities such as Beijing (similar to Euro 6c). In North America Tier 3 legislation will be implemented by 2017. Overall, with support from various tightening globally the light duty catalyst market is expected to grow from $6bn in 2015 to $9bn in 2025. Figure 296 shows the development of light duty emissions legislation globally to 2025.

Figure 296: Light Duty Emissions Control Legislative Roadmap

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	EU 6b		EU 6c / RDE Phase 1				RDE Phase 2 / 95 g/km CO2			EU 7?	
North America EPA	Tier 2		Tier 3 Phase In: NMOG + NOx, PM Tightening								
North America CARB	LEV III Phase In: NMOG + NOx, PM Tightening						LEV III Further Tightening				
Japan	JP09				JP18?						
South Korea (Gasoline)	K-ULEV		K-ULEV 70				K-SULEV?				
South Korea (Diesel)	EU 6b				EU 6c						
China (Beijing)	BJ5 (EU 5)		BJ6				BJ6 Phase 2				
China (Nationwide)	China 4 (EU 4)			China 5 (EU 5)			China 6				
India	BS4 (EU 4)						BS6 (Eu6)				
Indonesia	EU 2			EU 4							
Thailand	EU 4				EU 5					EU 6	

Source: Johnson Matthey

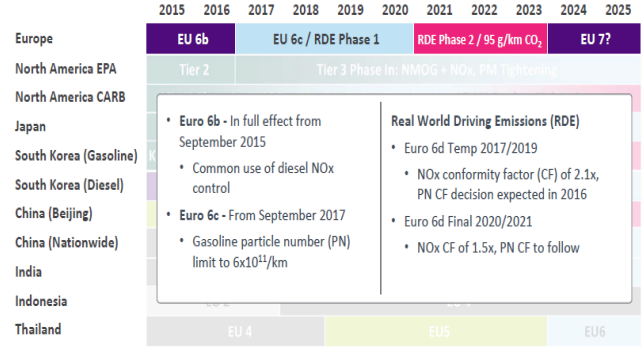
Figure 297: Good Sales Growth Continues in Light Duty



Source: Johnson Matthey

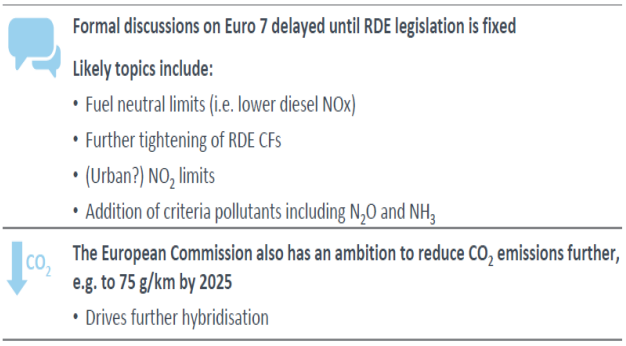
The Volkswagen emissions issue has led to increased pressure on real-world emission standards. Several groups have argued the testing approach used by regulators—a series of fixed speeds, gear shift points, acceleration rates, no air conditioning—results in dramatically understated emissions. As a result, a new "Worldwide Harmonized Light Vehicle Test Procedure" (WLTP) is currently under development, and is will incorporate "real world driving emissions" (RDE) starting 2017 (standard is also known as Euro 6d) – see Figure 298 for details. Euro 7 has been delayed to ensure RDE is fixed, but Figure 299 shows the likely direction of travel.

Figure 298: Focus on gasoline and diesel emissions in Europe



Source: Johnson Matthey

Figure 299: Euro 7 legislation is delayed



Source: Johnson Matthey

SCR is expected to become the norm across the industry in preference to lean NOx traps, first SCR then advanced SCR. Currently two thirds of cars use SCR and one third NOx traps. We note that JMAT expects the addition of some NOx adsorption over and above the advanced SCR systems which means that Rhodium is required. We summarize the differences below:

- NOx trap: NAC (NOx adsorption catalysts) are PGM based catalysts which convert NOx to nitrogen from a lean burn internal combustion engines (primarily diesels). It generally has three active components: an oxidation catalyst such as platinum (Pt), an adsorbent such as barium and/or other oxides, and a reduction catalyst such as rhodium (Rh). The adsorbers, which are incorporated into the catalyst washcoat, chemically bind NOx during lean engine operation. When the adsorber capacity is saturated, the system is regenerated during a period of rich

engine operation, and the released NOx is reduced to nitrogen over the catalyst. NOx traps are generally used in smaller vehicles.

- SCR System: Selective catalytic reduction is metal-zeolite based catalyst system which has low PGM loading (slip catalyst only). This system reduces the levels of NOx in the engine exhaust using ammonia and converts it into nitrogen. As highlighted in Figure 300 it requires urea injection system with tank, doser and injection system. This is a very efficient NOx reduction mechanism and helps in achieving up to 90% of reduction. Generally, SCR systems are classified in two broad types Ammonia-SCR and Hydrocarbon-SCR. These are more frequently used in large vehicles.

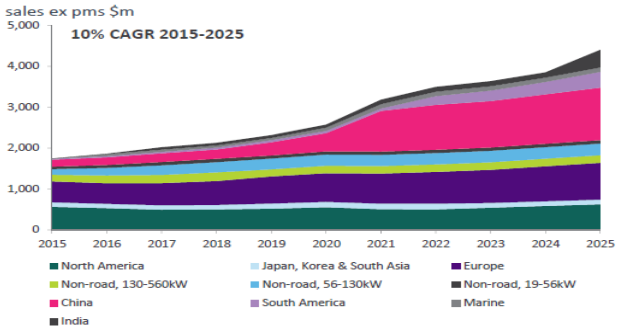
Figure 300: Technologies to control NOx

NOx Adsorber Catalysts (NAC)	Selective Catalytic Reduction (SCR)	Advanced SCR
PGM based catalyst	Metal-zeolite based catalyst	Allows improved thermal management of catalyst on vehicle
Requires fuel addition, hence penalty on fuel consumption	Low pgm loading (slip catalyst only)	Technically very demanding system
Favoured on smaller vehicles	Requires urea injection system, with tank, doser and injector systems	May require additional SCR / ammonia slip catalyst (ASC) to maximise NOx conversion
	Favoured on larger vehicles	Higher technology product adds value
	More reliable at higher speeds	

Source: Johnson Matthey

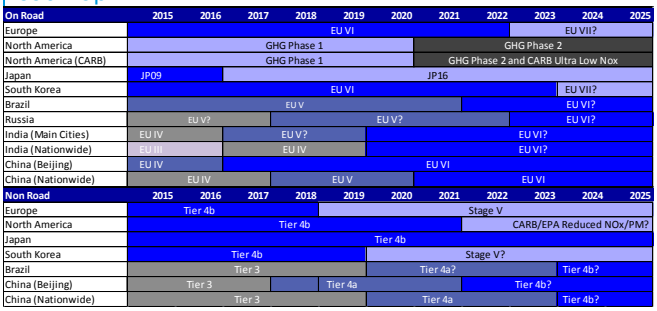
JMAT expects the HDD autocat market to grow further and reach over $4bn by 2025 from $1.75bn in 2015, helped by significant growth in China driven by EU VI equivalent implementation, a contribution from Europe, regulatory tightening in India and South America and a contribution from non-road sector. Figure 301 shows the development of the HDD market to 2025 with China being a key growth driver. Figure 302 shows the legislative road map for heavy duty diesel emissions control legislation.

Figure 301: HDD market to reach $4bn by 2025



Source: Johnson Matthey

Figure 302: Heavy duty diesel emission control legislative roadmap



Source: Johnson Matthey

Jewellery demand has picked up in China, but remains demographically challenged

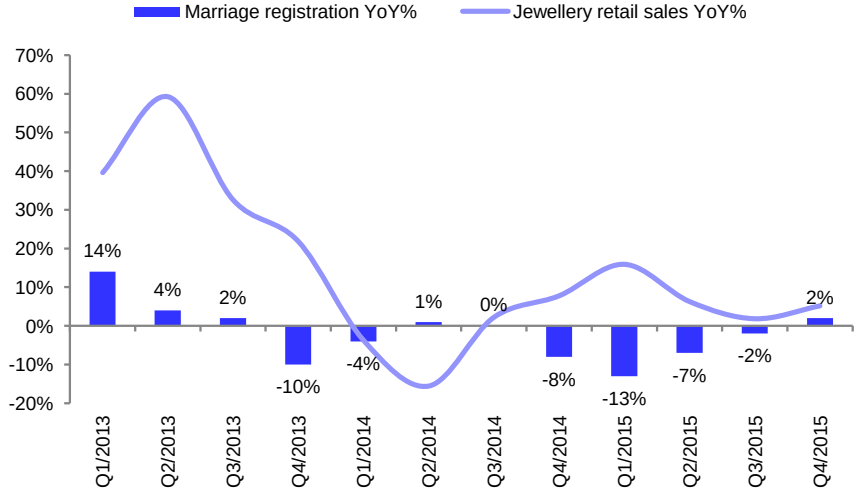
A key feature of the platinum market last year was the lack of Chinese buying in response to price weakness for much of the year. It was only in the latter

half of the year that the outlook improved and buying activity (as indicated by the trading activity on the Shanghai Gold exchange) accelerated. The malaise in the platinum jewellery sector was reflective of the China luxury goods sector as a whole. In 2015, the China luxury market went down ~2% to ~113B RMB, impacted mostly by slowdown in watches (-10%), men's wear (-12%), and leather goods (handbags down 5% and accessories down 6%); North and North-East regions were most impacted. Jewellery bucked the trend as was in fact up by 7%, womenswear up 10%, shoes up 2% and cosmetics up 5% The Market deceleration was amplified by continued anti-corruption scrutiny and a significant impact from the stock market crash in Q2/Q315.

The medium term outlook for jewellery demand, especially platinum jewellery remains mixed in our view. The aging population and falling number of marriages is a negative, whilst the rising middle class is a positive. The increasing sophistication and digitalization of the luxury goods market does add a level of complexity to the jewellery market in the medium term. Jewellery, especially platinum gemset jewellery does not lend itself to digital shopping. In our view, the continued growth in jewellery demand depends on an increasing marketing budget.

Chow Tai Fook (China's largest jewellery retailer) reported SSS (same store sales) down 15%, with China/HK down 6%/23%, similar to 1QFY16 (2QFY16 was impacted by a mini gold rush during July/August). Total retail sales declined 11%, with China and HK down 6% and 20% respectively, mainly driven by volume declines of 7% in China and 21% in HK. By product category, gem-set and gold declined 12% and 14%, respectively.

Figure 303: Wedding registrations picked up 2% year on year



Source: Deutsche Bank, Ministry of Civil Affairs of China, China Jewellery Index

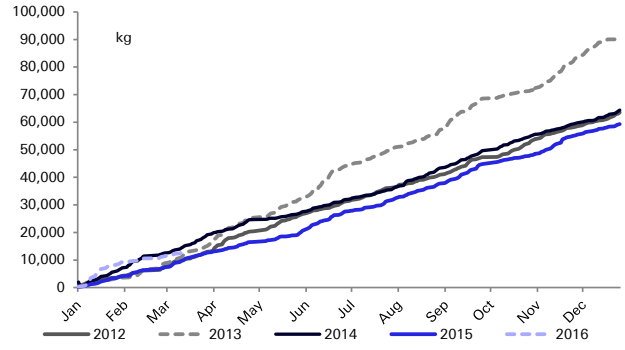
Key takeaways from a recent investor conference were:

- **Gold and jewelry might be viewed by customers as hard assets to hedge against RMB depreciation, according to CTF.** Although customers' primary reason will still be consumption demand, management believes that the potential increase in value might lure them to buy more. (Our China luxury

goods team believes that for gem-set, it might be more related to the state of economy.)

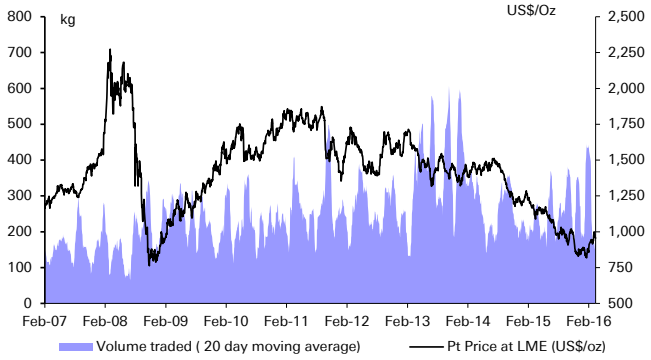
- **Store network.** While management believes the market is underpenetrated long term, it no longer sets a hard target for store openings in FY16. There is also a need to change the channel mix. Three to four years ago, 90% of its outlets were in department stores. These days, c.70% is in department stores, 20% in malls (with bigger stores as well as those in department stores) and 10% in other formats. Over the past 12 months, the company has closed more stores in tier-2 cities like Chongqing due to over-supply. This suggests that platinum jewellery demand may be maturing in the higher tier cities, with demand yet to accelerate in the Tier 3 and 4 cities.
- **Emphasis on product development in the future.** In the past, CTF relied on the strength of its network. These days, product design is more important and consumers want more choice; they also like licensed products. Sales of its three major collections were up 15% in 1HFY16, outperforming group performance. The company is also launching a program to certify its own diamonds.

Figure 304: A strong start to trading volumes in 2016



Source: Deutsche Bank, SGE

Figure 305: Pt trading volumes have recovered in Q4'15/Q1'16

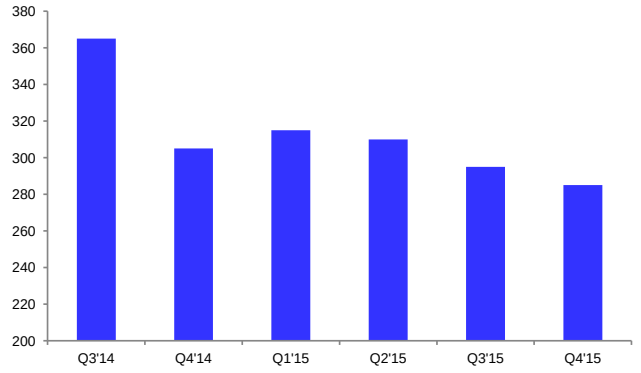


Source: Deutsche Bank, SGE

Recycling volumes down in Q4, but the effect will be temporary

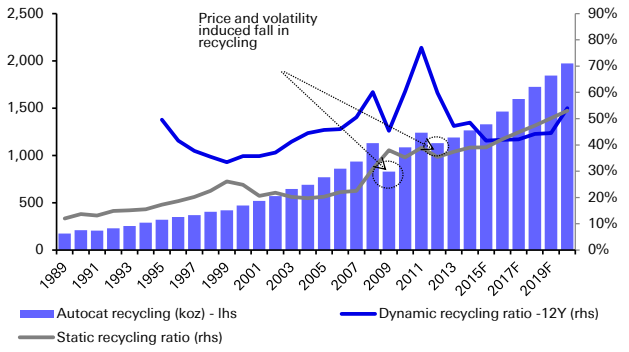
Metal recycling does act as a buffer in periods of extreme price movements. We remain skeptical that the withholding of recycled material in periods of price weakness is a permanent feature. This is especially true in the case of PGM's in the form of recycled autocats. Global car sales were lower than expectations last year, but were still in positive territory. The price weakness in the last two months of 2015 has however led to a relative shortage of scrap, with JMAT reporting volumes down 10% in the Precious Metals Products division. However, the collection part of the autocat recycling chain is dominated by smaller players who have small balance sheets, and are unable to hold onto metal units for too long. Channel checks suggest that UK vehicle volumes for scrapping have declined by nearly 50%, with many people preferring to hand down vehicles as the scrap value is now limited. We continue to forecast Autocat recycling volumes up 5% year on year in 2015.

Figure 306: Quarterly Autocat recycling volumes (koz)



Source: Deutsche Bank, World Platinum Investment Council

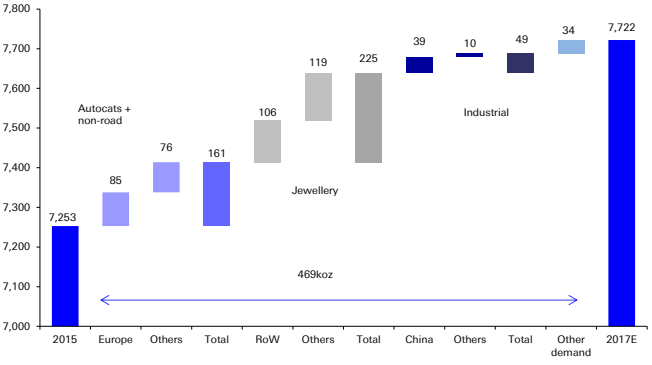
Figure 307: Autocat recycling volumes annual



Source: Deutsche Bank, SFA Oxford

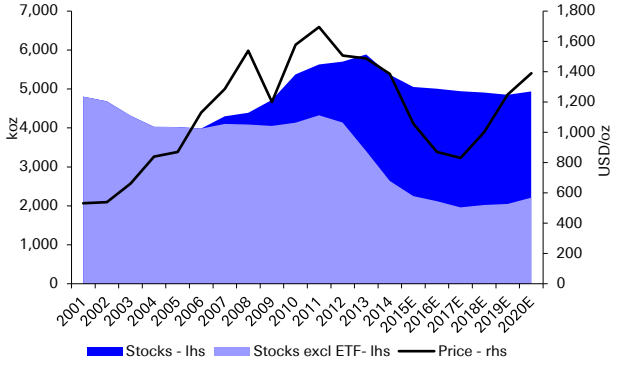
We outline the major components of demand over the next two years (to end 2017E) in the chart below. We forecast net demand to grow by 469Koz, with the main components being Jewellery demand, followed by Autocats. Despite the robust demand growth, we continue to forecast only modest deficits which will result in only a modest draw down of stocks by the end of the decade

Figure 308: Platinum's demand waterfall chart



Source: Deutsche Bank

Figure 309: Estimating the above ground stocks in platinum

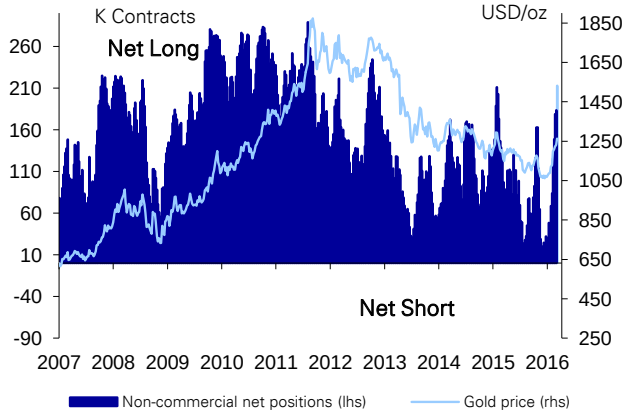


Source: Deutsche Bank, SFA Oxford

Contrasting investor sentiment between gold and the PGM's

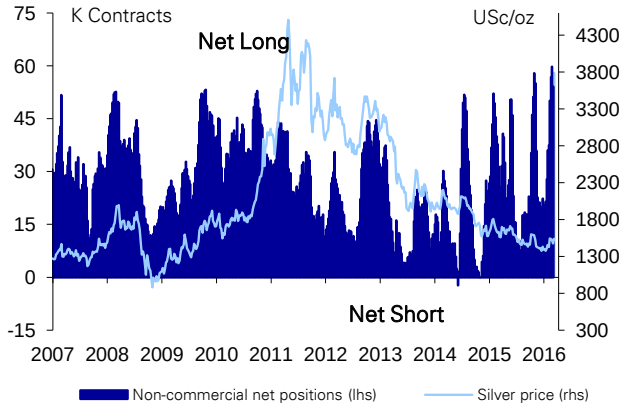
As equity markets have sold off firstly, the USD has paused for breath and the Fed softened its tone, investor sentiment towards the precious metal complex has significantly improved. There is however a marked difference between gold and silver to that of platinum and palladium. Comex net longs in gold, have increased by nearly **sixteen-fold** since December; 2.7x in silver whilst only 50% in platinum whilst palladium is down 26%. This indicates a macro driven preference for the precious metal complex.

Figure 310: Non commercial net long positions on the Comex Gold market



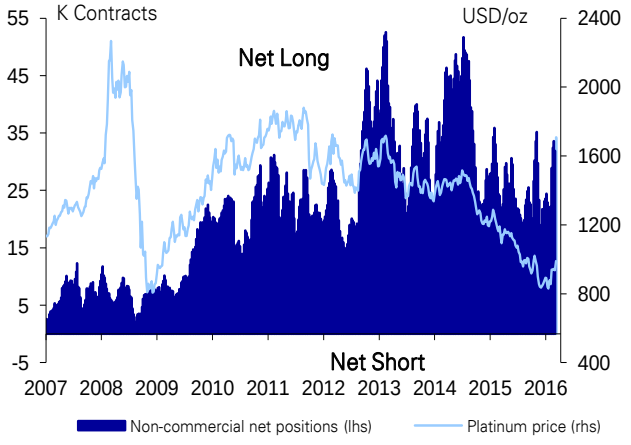
Source: Deutsche Bank, Reuters, CFTC

Figure 311: Non commercial net long positions on the Comex Silver market



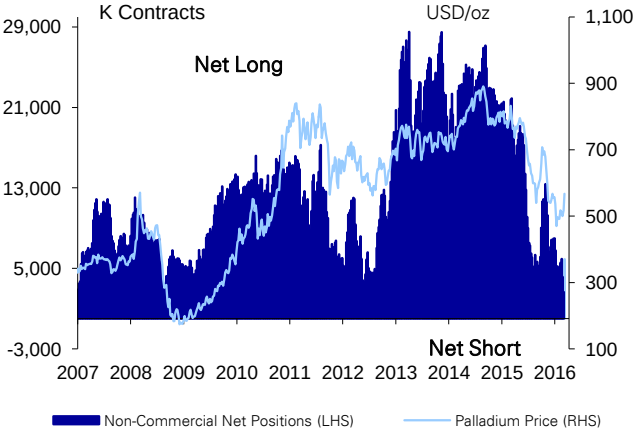
Source: Deutsche Bank, Reuters, CFTC

Figure 312: Non commercial net long positions on the Nymex Platinum market



Source: Deutsche Bank, Reuters, CFTC

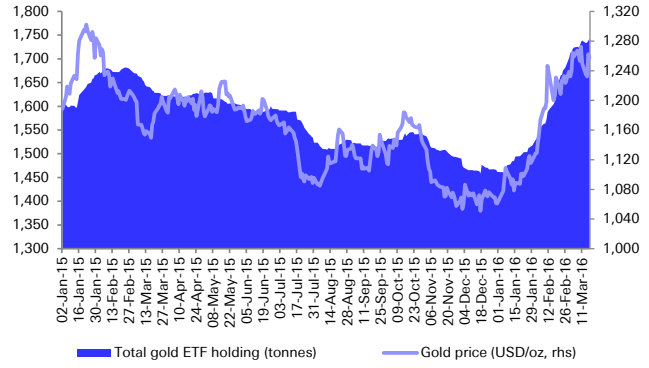
Figure 313: Non commercial net long positions on the Nymex Palladium market



Source: Deutsche Bank, Reuters, CFTC

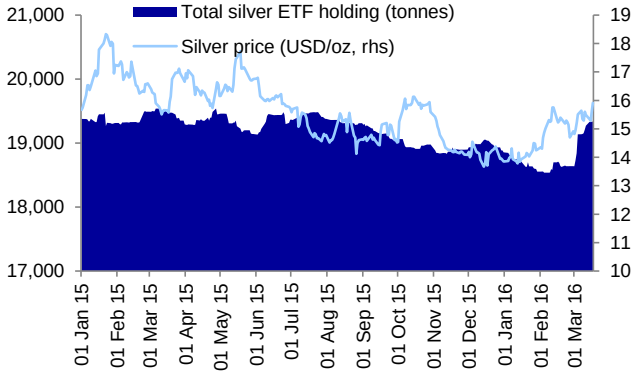
There is also a marked difference between the ETF flows. The total gold holdings in the combined ETF's have increased by 19% or 6.5Moz. The silver, ETF has caught up just recently and is up 2.5% since the beginning of the year. In contrast, platinum and palladium ETF's have seen steady outflows of 80koz and 150koz respectively. This equates to a decline of 2%, 3% and 6% of the total holdings. This in our view confirms the risk off buying of gold, with the other precious metals not benefitting from this trade as yet. Holdings in the silver, platinum and palladium have however been more sticky when there have been large sell offs in gold.

Figure 314: Total gold ETF holdings (tonnes)



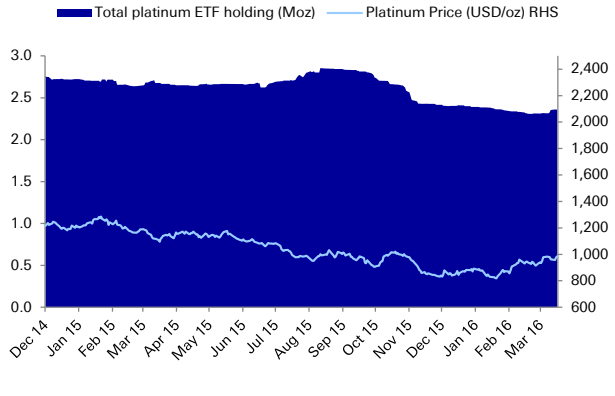
Source: Deutsche Bank, Bloomberg Finance LP

Figure 315: Total silver ETF holdings (tonnes)



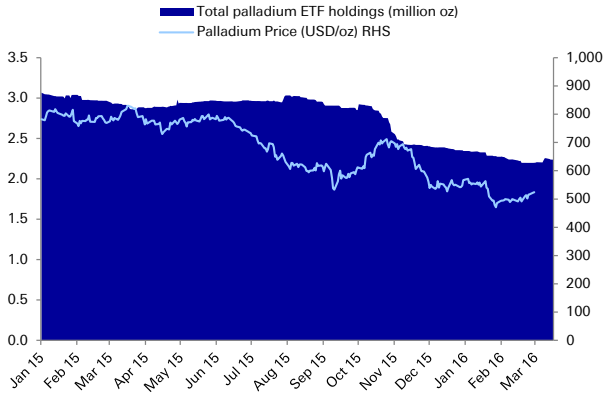
Source: Deutsche Bank, Bloomberg Finance LP

Figure 316: Total platinum ETF holdings (tonnes)



Source: Deutsche Bank, Bloomberg Finance LP

Figure 317: Total palladium ETF holdings (tonnes)

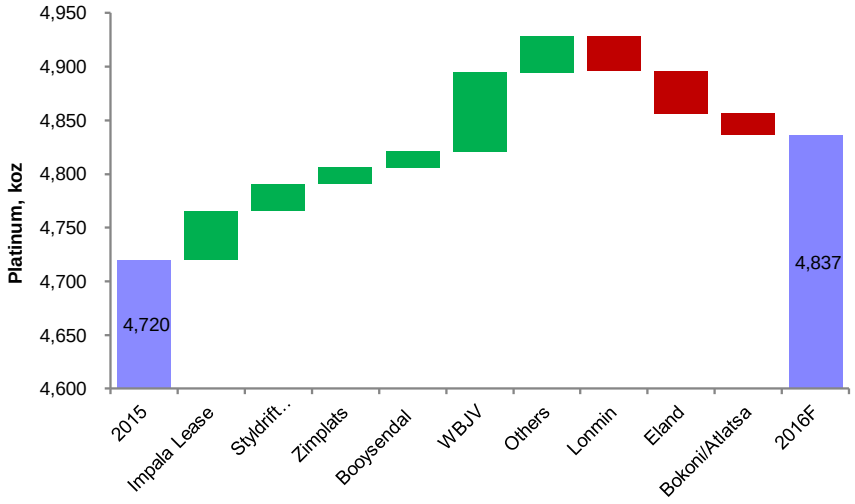


Source: Deutsche Bank, Bloomberg Finance LP

Evolution of supply: lack of capex to be felt in 2019

From a bottom-up analysis of producers' plans, we estimate that primary production will increase by approximately 115kozpa (platinum) in 2016 over 2015. This will come from higher production at Zimplats, the Impala Lease (despite the fire at 14-Shaft); the ramp-up of PTM's WBJV; a full-year of steady-state at Booysendal; and early development at Styldrift. This more than offsets production declines at Lonmin, Eland Platinum and Atlatsa/Bokoni.

Figure 318: Growth expected in SA mined supply (including Zimbabwe)



Source: Deutsche Bank, Company Data

Some supply cuts have been made, Lonmin, Bokoni/Atlatsa

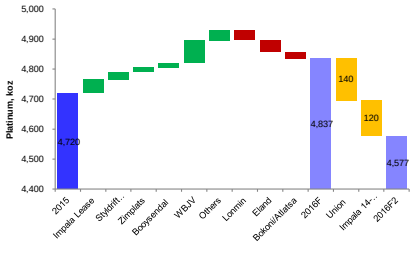
In limited instances, primary production has been cut in response to sustained low Rand-PGM prices. Lonmin, Eland, Bokoni/Atlatsa are examples where we expect lower production in 2016 as a result of active management decisions to close/restructure/reduce loss-making or marginal production.

Production at risk should prices go lower: Union; 14-Shaft? 250kozpa

Amplats stated at FY15 results that if it could not sell Union mine **and** Union could not be made cash flow positive, it would consider alternatives including putting Union on care and maintenance. Union produced c.140koz of platinum in 2015. The Impala Lease Area 14-Shaft experienced a underground fire at the beginning of CY2016. This shaft produces c.120kozpa (DBe). Should the price fall low enough, it may result in Impala not re-opening the shaft, despite insurance cover of the infrastructure and business continuity cover.

Neither the closure of Union nor 14-Shaft factor in our base case assumptions, however these ounces are worth highlighting as production that could be taken out of the market relatively quickly should prices take a leg lower.

Figure 319: SA-Primary production could reduce year-on-year if Union and Impala 14-Shaft were closed



Source: Deutsche Bank, Company Data

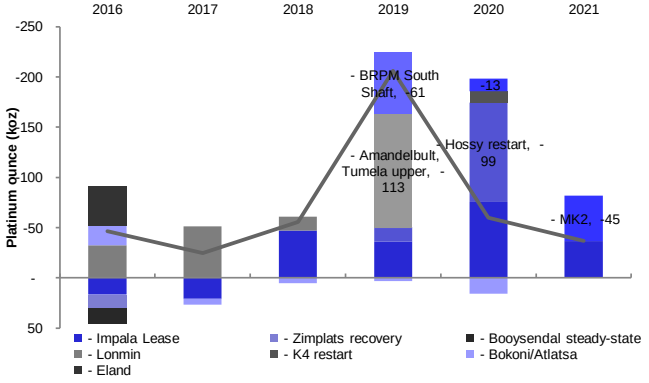
Underinvestment in replacement capex could hit production in 2018/2019

Producers have largely used capital expenditure as the lever to protect balance sheets from low Rand-PGM prices. Amplats has deferred all major capital decisions until at least 2017; RBPlat has deferred the Styldrift 1 project ramp-up and plans to ramp-up on higher and rising prices; Lonmin has made an effort to minimize capital expenditure in FY16 and FY17 (FY18 has a c.70%

increase in planned capex to maintain production) and Impala has re-prioritised and rescheduled capex; despite pressing ahead with 16- and 20-Shafts.

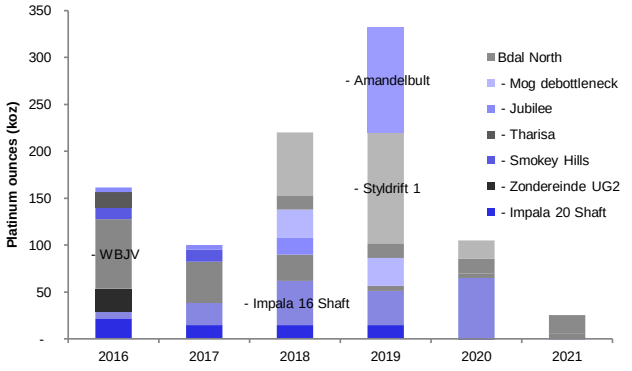
We note that in 2019 and 2020, there is a peak building of reductions in production from the closure/reduction of production from existing mines (around 200-250kozpa). This is matched by a peak of ounces from replacement projects which are intended to replace this production. If operating cash flows are restricted by low Rand-PGM prices, replacement projects may not be funded, leading to lower production on capex-starvation, rather than an active decision to cut production.

Figure 320: Forecast production reductions at SA mines



Source: Deutsche Bank, Company Data

Figure 321: Forecast production added from projects



Source: Deutsche Bank, Company Data

There is a sharp decrease in ounces in 2019-2020 as Amandelbult (Tumela upper) and BRPM (South Shaft) are mined-out/closed. Amandelbult is considering various options to replace Tumela Upper ounces; and BRPM intends to bring online Styldrift to replace BRPM South Shaft ounces. We also note that Lonmin's Business Plan requires a re-start of Hossy Shaft in 2019/2020; MK2 in 2018/2019/2020 and K4 in 2020 to maintain its (lower) production profile. Lonmin intends to double its capex in 2018 from 2017 in order to achieve this. Should operating cash flows be marginal, as a result of low Rand-PGM prices, these replacement projects may not be affordable. As pure replacement projects, we would then expect Lonmin's production profile to decline further.

Figure 322: Deutsche Bank platinum supply demand model

Platinum		2010	2011	2012	2013	2014	2015F	2016F	2017F	2018F	2019F	2020F
South African supply	Koz	4,635	4,855	4,205	4,353	3,103	4,214	4,170	4,239	4,296	4,287	4,442
North American supply	Koz	200	350	310	340	395	375	375	375	380	385	390
Russian production	Koz	825	835	800	740	740	735	700	705	710	715	720
Russian stockdraw	Koz	0	0	0	0	0	0	0	0	0	0	0
Russian sales	Koz	825	835	800	740	740	735	700	705	710	715	720
Other*	Koz	1,475	1,680	1,605	1,792	1,880	1,903	2,096	2,244	2,375	2,502	2,634
Total supply	**Koz**	**7,135**	**7,720**	**6,920**	**7,225**	**6,119**	**7,227**	**7,341**	**7,563**	**7,761**	**7,889**	**8,186**
Supply growth	*%*	*4.1*	*8.2*	*-10.4*	*4.4*	*-15.3*	*18.1*	*1.6*	*3.0*	*2.6*	*1.7*	*3.8*
Total demand	**Koz**	**7,160**	**7,270**	**7,090**	**7,680**	**7,271**	**7,253**	**7,471**	**7,722**	**7,700**	**7,862**	**8,025**
Demand growth	*%*	*15.2*	*1.5*	*-2.5*	*8.3*	*-5.3*	*-0.2*	*3.0*	*3.4*	*-0.3*	*2.1*	*2.1*
Autocatalyst & Off-Road	Koz	3,075	3,185	3,190	3,180	3,245	3,402	3,474	3,563	3,640	3,678	3,722
Chemical	Koz	440	470	505	585	585	600	603	618	632	646	661
Electrical	Koz	220	220	180	170	185	166	167	168	168	167	165
Glass	Koz	385	555	160	190	115	145	125	165	170	175	170
Investment	Koz	655	460	455	830	245	75	85	95	-95	-85	-75
Jewellery	Koz	1,685	1,665	1,920	2,080	2,215	2,153	2,295	2,378	2,429	2,508	2,596
Petroleum	Koz	170	210	180	170	155	170	165	170	165	170	170
Other	Koz	300	275	265	235	280	290	300	300	320	325	330
Stationary fuel cells		0	0	0	0	0	0	0	0	0	0	0
Market balance	**Koz**	**-25**	**450**	**-170**	**-455**	**-1,152**	**-26**	**-130**	**-159**	**61**	**27**	**161**
Annual average price	**US$/oz**	**1612**	**1721**	**1,397**	**1,487**	**1,386**	**1,056**	**870**	**831**	**1,000**	**1,250**	**1,390**

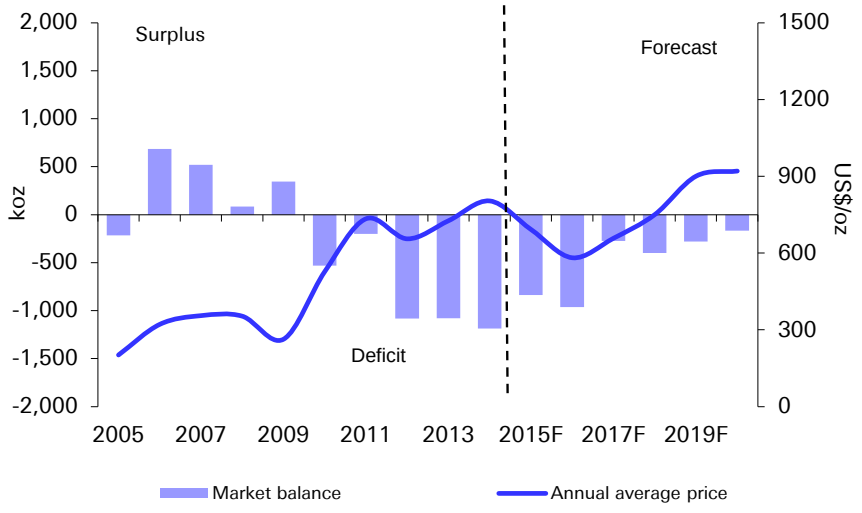
Source: Deutsche Bank, SFA Oxford, JMAT

Palladium: Sound fundamentals undermined by sentiment swings

Chinese and US Auto sales will be a key sentiment driver

The narrative on palladium remains unchanged in our view. Fundamentally the market is undersupplied, with solid demand growth in Autocat demand and limited mined supply growth. The vehicle per capita in many emerging markets (which have a palladium / gasoline bias) is low compared to developed economies. Furthermore, affordability means that emission control (and hence PGM loadings) are lower. The combination of growing vehicle ownership and tightening emission standards is a strong structural demand pull. However, the trajectory of vehicle sales is not linear and given the economic weakness / uncertainty in some of the key emerging markets such as Brazil, Russia and to a lesser extent China, sentiment swings can be very influential on markets such as palladium. The legacy of past oversupply has left the market with a large inventory which is being drawn down, but for now remains a source of ounces.

Figure 323: Palladium supply – demand balance

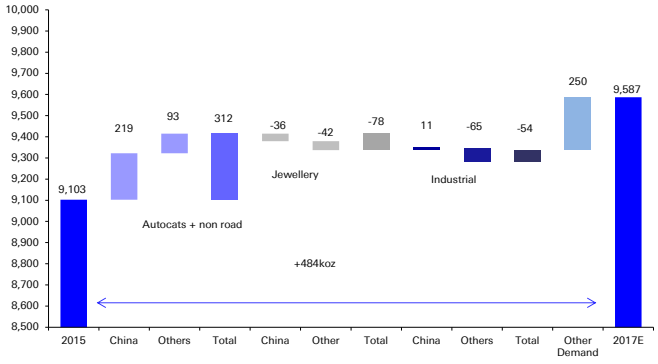


Source: Deutsche Bank, SFA Oxford, JMAT

We forecast deficits until the end of the decade, but we expect these deficits to shrink due to increasing recycled supply becomes available, The deficit in 2016E is higher than 2015 due to the processing changes at Norilsk. Mined inventory built up in 2016 will however be released in 2017, which will shrink the deficit materially.

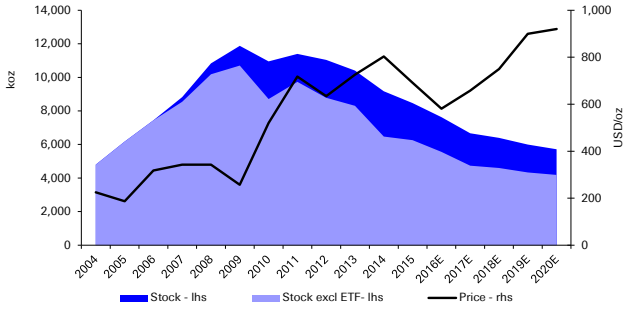
We outline the main drivers for palladium demand over the next two years. The main demand components are autocats with 312koz increase in demand through 2017. We expect some contraction in jewellery and industrial applications, as palladium loses market share to platinum and white gold in the jewellery market, and to base metals in many industrial applications such as electronics. The persistent over supply means that we expect the above ground liquid stocks, currently at 2,210koz to diminish to 1932koz by 2017.

Figure 324: Palladium's demand waterfall



Source: Deutsche Bank

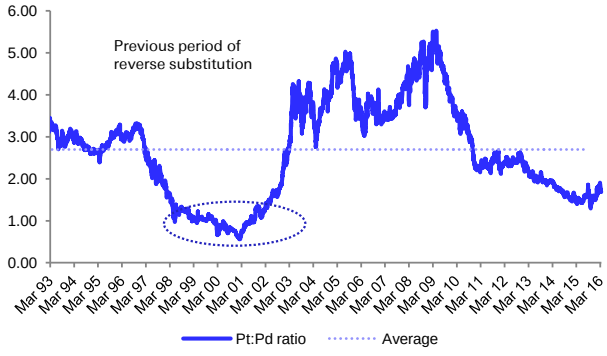
Figure 325: Estimating the above ground stocks in palladium



Source: SFA Oxford, Deutsche Bank

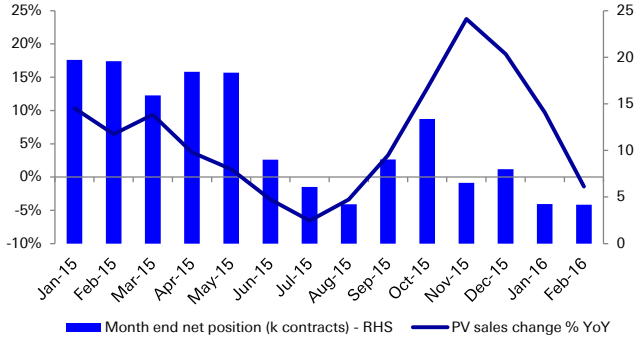
Whilst still up y% year to date, Palladium has under-performed the precious metal complex, such that the Pt:Pd ratio is now back up at 1.69. The better fundamentals in palladium versus platinum should drive a re-rating back to the 1.5 level in our view. However the extent of the rerating will depend on a recovery in Chinese vehicle sales, which has been a key driver of sentiment. Although vehicle sales recovered rapidly post the sales tax cut in vehicles below 1.6l displacement, the market positioning as indicated by the net longs on the Comex remains fairly cautious, with many investors questioning the sustainability of the pick- up in sales. Given that the improvement in sales is driven by smaller vehicles which have a lower palladium loading, there is some foundation for the skepticism. Although the increase in credit in China has so far made its way into the property market at the expense of other consumer items, we think that this will eventually spill over into the vehicle markets.

Figure 326: Pt-Pd ratio



Source: Thomson Reuters Datastream, Deutsche Bank

Figure 327: Comex net position vs China PV sales growth



Source: Deutsche Bank, Reuters, CFTC

Figure 328: Palladium supply-demand balance

Palladium		2010	2011	2012	2013	2014	2015F	2016F	2017F	2018F	2019F	2020F
South African supply	koz	2,640	2,576	2,251	2,376	1,845	2,423	2,391	2,494	2,527	2,609	2,656
North American supply	koz	590	900	895	928	1,055	1,038	1,015	1,008	1,001	994	988
Zimbabwe	koz	220	265	265	331	315	337	343	352	352	355	355
Russian production	koz	2,720	2,705	2,630	2,650	2,690	2,595	2,500	2,965	2,785	2,785	2,785
Russian stockdraw	koz	1,000	775	260	250	0	0	0	0	0	0	0
Russian sales	koz	3,720	3,480	2,890	2,900	2,690	2,595	2,500	2,965	2,785	2,785	2,785
Other mine	koz	185	155	300	200	455	455	446	437	428	420	411
Secondary Supply		1,315	1,695	1,585	1,685	1,805	1,908	2,044	2,194	2,320	2,460	2,616
Total supply	**koz**	**8,670**	**9,071**	**8,186**	**8,420**	**8,165**	**8,756**	**8,739**	**9,451**	**9,414**	**9,624**	**9,812**
Supply growth	*%*	*7.5*	*4.6*	*-9.8*	*2.9*	*-3.0*	*7.2*	*-0.2*	*8.1*	*-0.4*	*2.2*	*1.9*
Total demand	**koz**	**9,295**	**7,930**	**9,480**	**9,524**	**9,950**	**9,103**	**9,561**	**9,587**	**9,677**	**9,769**	**9,845**
Demand growth	*%*	*25.9*	*-14.7*	*19.5*	*0.5*	*4.5*	*-8.5*	*5.0*	*0.3*	*0.9*	*1.0*	*0.8*
Autocatalyst	koz	5,680	6,215	6,835	7,244	7,490	7,716	7,894	8,028	8,218	8,407	8,581
Dental	koz	595	540	530	460	425	420	405	390	378	365	350
Electronics	koz	970	895	760	690	660	654	649	596	544	493	442
Chemical	koz	370	440	530	510	490	519	500	495	490	486	483
Jewellery	koz	495	295	255	245	205	203	167	125	89	52	16
Investment	koz	1,095	-565	470	275	600	-490	-140	-138	-136	-134	-132
Other	koz	90	110	100	100	80	80	85	90	95	100	105
Market balance	**koz**	-625	1,141	-1,294	-1,103	-1,785	-347	-822	-136	-263	-145	-33
Annual average price	**US$/oz**	**525**	**733**	**644**	**726**	**803**	**692**	**581**	**658**	**750**	**900**	**920**
Market balance without investment demand	**koz**	**470**	**576**	**-824**	**-828**	**-1,185**	**-837**	**-962**	**-274**	**-400**	**-279**	**-165**

Source: Johnson Matthey, SFA oxford, Deutsche Bank

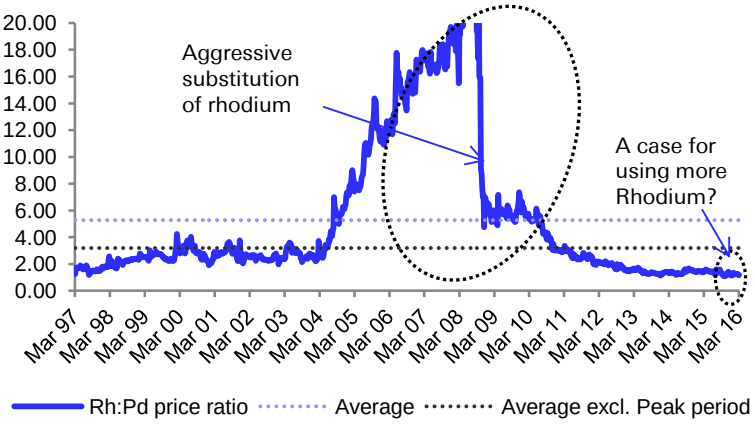
Rhodium: An over supplied market

Embedded resistance to reverse substitution

The February investor day by Johnson Matthey confirmed that there will be a large swing in favour of Selective Catalytic Reduction (SCR) technology (low PGM loadings) in passenger vehicles to treat NOx emissions, as these have proven to be more successful in meeting emission standards under real world driving conditions. This dampens the expected demand growth for Rhodium in autocats over the next few years. Furthermore, the more forgiving phasing in of the RDE (standard is also known as Euro 6d), means that the need to use both SCR and Lean NOx traps (high PGM and Rhodium loadings) in tandem is unlikely until the end of the decade.

The attractive price ratio versus palladium (now at 1.18) should in theory drive some substitution back into rhodium from palladium. However, the memories of the Auto OEM are run deep, and there is a reluctance to substitute back to rhodium in fear of future supply shocks.

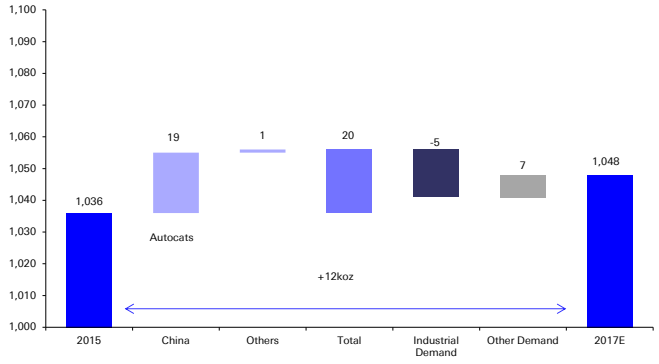
Figure 329: Rhodium - palladium ratio



Source: Thomson Reuters Datastream, Deutsche Bank

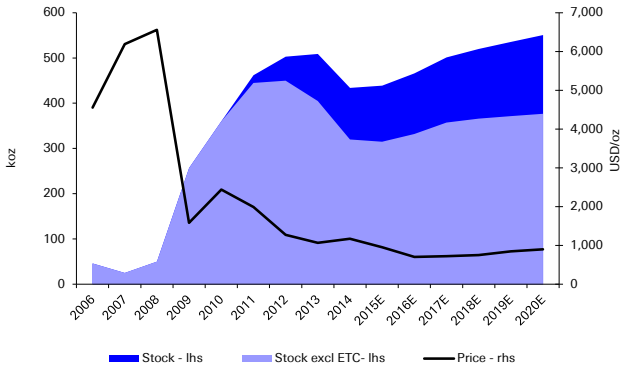
Autocats are by far and away the dominant driver of demand as outlined in the demand waterfall chart below. In the absence on an upside surprise on vehicle demand or a change of mind set from the Auto OEM's in favour of rhodium, we forecast modestly oversupplied for the four years. In Autocats, we estimate that an additional demand of c.83koz will be required by the end of the decade, most of which will be supplied by recycling c.50koz, resulting in a modest net demand of 23koz by the end of the decade. In a market which is in a small surplus, or balanced at best, it is difficult to build a case for sharply recovering prices from a fundamental perspective, especially when there are highly liquid producer stocks of c.300 – 350koz. We forecast liquid stock to rise by 50koz by the end of the decade to 174koz.

Figure 330: Rhodium demand waterfall



Source: Deutsche Bank,

Figure 331: Estimating the above ground stocks in Rhodium



Source: Deutsche Bank, SFA Oxford

Figure 332: Rhodium supply-demand balance

Rhodium		2010	2011	2012	2013	2014	2015F	2016F	2017F	2018F	2019F	2020F
Total supply	**Koz**	**975**	**1,043**	**1,001**	**1,003**	**860**	**1,012**	**1,053**	**1,073**	**1,091**	**1,114**	**1,141**
Supply growth	%	1.9	7.0	-4.0	0.3	-14.3	17.7	4.0	2.0	1.7	2.1	2.4
South African supply	koz	632	641	599	590	425	555	596	609	600	630	646
North American supply	koz	10	23	35	35	40	45	45	45	45	45	45
Zimbabwe	koz	19	29	30	31	35	34	23	21	39	22	22
Other	koz	3	3	10	10	10	10	11	11	12	12	13
Russian sales	koz	70	70	75	70	75	74	73	72	71	70	70
Secondary	koz	241	277	252	267	275	295	305	315	325	335	345
Total demand	**Koz**	**887**	**908**	**958**	**1,044**	**1,015**	**1,036**	**1,036**	**1,048**	**1,083**	**1,108**	**1,136**
Demand growth	%	23.9	2.4	5.5	9.0	-2.8	2.0	0.0	1.2	3.3	2.4	2.5
Autocat	koz	727	715	782	819	855	860	875	880	907	925	943
Chemical	koz	67	72	80	85	85	90	70	75	80	86	92
Electrical	koz	4	5	5	5	5	6	7	7	7	6	6
Glass	koz	68	78	25	35	15	25	27	29	31	33	35
Investment	koz	0	0	36	60	10	10	10	10	10	10	10
Other	koz	21	38	30	40	45	45	46	47	48	49	50
Market balance	**Koz**	**88**	**135**	**43**	**-41**	**-155**	**-23**	**17**	**25**	**9**	**6**	**5**
Annual average price (USD/oz,	**US$/oz**	**2,442**	**1,990**	**1,274**	**1,067**	**1,172**	**953**	**703**	**724**	**750**	**850**	**900**

Source: Johnson Matthey, SFA oxford, Deutsche Bank

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Equities summary

Post these commodity revisions, the price to NPV ratio for the Mining Sector (where the sector is defined as the stocks under coverage) is at 0.91x.

All of the stocks under our coverage are trading at par or at a discount to NAV, with the exception of Antofagasta, Aquarius Platinum, Boliden, Fresnillo, Lonmin, Polymetal, Randgold and South32.

Figure 333: European metals & mining valuation table (Calendar year)

				MCap	P/E			EV/EBITDA			FCF Yield			Div Yld	P/NPV
Company	**Rec**	**Price**	**Target**	**US$mn**	**2015**	**2016E**	**2017E**	**2015**	**2016E**	**2017E**	**2015**	**2016E**	**2017E**	**2016E**	**Current**
Acacia Mining plc	Buy	268	340	1,595	nm	14.5	11.1	8.4	4.7	3.7	nm	3.6	7.1	1.1	0.86
Anglo American PLC	Hold	555	515	10,400	20.2	14.3	8.4	nm	6.3	4.7	nm	nm	16.3	0.0	0.58
Antofagasta PLC	Hold	515	450	7,350	nm	44.3	22.8	16.1	10.0	8.3	nm	nm	2.8	0.8	1.10
Aquarius Platinum Ltd	Buy	14	14	291	nm	nm	nm	32.8	34.7	14.8	NM	4.3	2.6	0.0	3.51
BHP Billiton	Hold	831	900	69,722	14.0	42.0	49.4	7.5	18.6	17.8	6.2	6.6	8.9	3.7	0.92
Boliden AB	Buy	139.5	165.0	4,659	16.2	11.9	7.5	6.7	5.8	4.1	6.0	nm	10.1	2.9	1.02
Ferrexpo Plc	Buy	33	110	282	3.5	2.2	3.0	4.0	3.0	3.4	22.0	59.6	23.6	0.0	0.31
Fresnillo PLC	Sell	988	790	10,549	157.6	67.4	38.1	15.1	14.7	11.2	0.9	0.4	2.9	0.7	1.41
Glencore	Hold	161	160	33,133	31.2	56.9	35.0	8.9	6.9	6.3	17.8	11.7	7.5	5.1	0.78
KAZ Minerals PLC	Hold	180	170	1,168	nm	21.3	8.2	13.8	15.3	6.6	nm	nm	nm	0.0	0.81
Lonmin Plc	Sell	157	45	1,339	nm	nm	nm	nm	nm	11.5	nm	nm	nm	0.0	2.10
Nordgold N.V.	Buy	2.90	3.70	1,091	5.8	9.2	7.4	3.1	3.3	2.5	18.8	8.4	23.7	3.7	0.48
Norsk Hydro ASA	Hold	33.91	33.0	8,297	10.8	19.1	14.1	4.3	4.1	3.4	12.7	0.1	8.3	2.2	0.95
Nyrstar NV	Hold	0.71	0.98	671	nm	99.8	4.1	7.1	4.4	2.1	nm	nm	52.3	0.0	0.52
Polymetal International	Hold	723	560	4,429	20.3	14.3	15.4	9.3	7.6	6.7	5.5	8.1	12.5	2.1	1.55
Randgold Resources	Hold	6510	5630	8,794	34.0	44.0	32.6	18.8	19.8	15.6	2.1	1.7	1.7	0.7	1.28
Rio Tinto PLC	Buy	2015	3000	56,159	16.0	17.3	11.7	7.6	6.7	5.3	3.3	9.9	8.8	3.8	0.76
South32	Hold	82	80	6,356	nm	45.3	52.7	nm	5.1	5.1	nm	10.6	8.3	0.2	1.03
Vedanta Resources PLC	Hold	310	260	1,241	nm	nm	nm	6.2	8.4	8.2	NM	NM	NM	1.2	0.71
Weighted Average				**227,526**	**23.5**	**35.4**	**29.9**	**8.1**	**11.2**	**10.0**	**6.3**	**6.9**	**8.4**	**3.1**	**0.91**

Source: Deutsche Bank, Company data, Priced 18 MAR 2016

Changes to estimates

Figure 334: European miner financial year earnings estimates and target price revisions

			Rec	Target	2015	2016E	2017E	2018E
Acacia Mining	(US¢)	Prev	Buy	350	-2	27	35	35
		New	Buy	340	-2	27	35	35
		% change		-2.9%	0.0%	0.7%	0.2%	-0.3%
Antofagasta	(US¢)	Prev	Hold	510	1	16	33	67
		New	Hold	450	1	17	33	62
		% change		-11.8%	0.0%	7.7%	0.0%	-7.1%
Anglo American	(US¢)	Prev	Hold	500	64	44	105	179
		New	Hold	515	64	56	96	161
		% change		3.0%	0.0%	29.1%	-8.0%	-9.9%
Aquarius	(US¢)	Prev	Buy	14	-3	-8	-1	-0.1
		New	Buy	14	-3	-1	-1	-0.5
		% change		0.0%	0.0%	92.3%	31.7%	-262.2%
BHP Billiton	(US¢)	Prev	Hold	950	162	18	61	123
		New	Hold	900	162	18	40	96
		% change		-5.3%	0.0%	-3.2%	-35.1%	-22.2%
Boliden	(SEK)	Prev	Buy	180	9.7	14.9	23.2	20.3
		New	Buy	165	9.7	11.7	18.5	17.0
		% change		-8.3%	0.0%	-21.5%	-20.2%	-16.0%
Ferrexpo	(US¢)	Prev	Buy	120	24	21	18	23
		New	Buy	110	24	22	16	22
		% change		-8.3%	0.0%	3.6%	-10.6%	-7.9%
Fresnillo	(US¢)	Prev	Sell	750	7	20	33	38
		New	Sell	790	7	21	38	43
		% change		5.3%	0.0%	4.9%	15.1%	14.3%
Glencore	(US¢)	Prev	Buy	138.0	10.3	4.5	7.4	16.4
		New	Hold	160.0	10.3	4.1	6.7	16.6
		% change	Rating Changed	3.6%	0.3%	-9.0%	-9.3%	1.4%
Kaz Minerals	(US¢)	Prev	Buy	197	-2	10	27	19
		New	Hold	170	-2	12	32	20
		% change	Rating Changed	-13.7%	0.0%	26.2%	18.6%	10.0%
Lonmin	(US¢)	Prev	Sell	42	-16	-1	8	15
		New	Sell	45	-16	-3	5	15
		% change		7.1%	0.0%	-295.8%	-35.2%	-3.8%
Nordgold	(US¢)	Prev	Buy	3.50	47	26	35	51
		New	Buy	3.70	47	32	39	52
		% change		5.7%	0.0%	23.1%	13.0%	0.8%
Norsk Hydro	(NOK)	Prev	Hold	34.0	3.3	1.48	3.25	6.32
		New	Hold	33.0	3.3	1.77	2.41	5.13
		% change		-2.9%	0.0%	20.0%	-25.8%	-18.9%
Nyrstar	(€)	Prev	Hold	0.98	-0.07	0.05	0.17	0.19
		New	Hold	0.98	-0.07	0.01	0.17	0.19
		% change		0.0%	0.3%	-87.0%	-1.7%	-1.7%
Polymetal	(US¢)	Prev	Hold	550	52	69	67	74
		New	Hold	560	52	73	68	74
		% change		1.8%	0.1%	5.9%	2.3%	0.3%
Randgold	(US¢)	Prev	Hold	5630	201	226	295	373
		New	Hold	5630	201	215	290	372
		% change		0.0%	0.0%	-4.9%	-1.9%	-0.1%
Rio Tinto	(US¢)	Prev	Buy	3300	250	203	331	370
		New	Buy	3000	250	169	249	269
		% change		-9.1%	0.0%	-16.5%	-24.8%	-27.4%
South32	(US¢)	Prev	Buy	84	11	3	9	13
		New	Hold	80	11	2	4	8
		% change	Rating Changed	-4.8%	0.0%	-45.4%	-53.7%	-39.6%
Vedanta	(US¢)	Prev	Sell	185	-14	-145	-171	-113
		New	Hold	260	-14	-135	-162	-113
		% change	Rating Changed	40.5%	0.0%	6.6%	5.2%	0.1%

Source : Deutsche Bank, Company data

Figure 335: Gearing and cash positions for the miners

	Gearing - ND/(ND+E)			EBITDA/ND			FCF (USD mn)			FCF - post Div (USD mn)		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Acacia Mining	-0.06	-0.10	-0.17	-1.66	-1.62	-1.10	-37	58	113	-54	41	96
Anglo American	0.37	0.37	0.33	-0.14	0.34	0.48	-755	-307	1695	-2075	-389	1282
Antofagasta	0.06	0.07	0.06	1.67	1.69	2.58	-734	-147	203	-941	-178	159
Aquarius	-0.24	-0.38	-0.34	-0.36	-0.05	-0.25	-5	18	7	-5	18	7
Boliden	0.16	0.22	0.12	1.50	0.96	2.36	2589	-3566	3871	1974	-3566	3871
BHP Billiton	0.26	0.28	0.23	0.76	0.13	0.64	7671	4822	6618	1173	702	5488
Ferrexpo	0.78	0.72	0.65	0.36	0.41	0.38	107	168	67	29	168	67
Fresnillo	0.15	0.16	0.08	1.24	1.62	3.98	74	40	309	37	-11	210
Glencore	0.41	0.30	0.30	0.27	0.37	0.41	7626	3895	2473	5298	3895	-183
KAZ Minerals	0.87	0.88	0.86	0.09	0.08	0.17	-1205	-612	-250	-1205	-612	-256
Lonmin	0.11	-0.05	-0.05	-0.28	-0.83	-1.29	-148	-84	30	-167	-103	11
Norsk Hydro	-0.07	-0.04	-0.09	-2.59	-4.09	-1.91	9241	72	5759	6871	-1971	4227
Nyrstar	0.54	0.32	0.12	0.35	0.63	3.25	-502	-29	348	-502	-29	349
Nordgold	0.36	0.40	0.26	1.04	0.80	1.38	191	91	258	132	11	218
Polymetal	0.63	0.51	0.30	0.44	0.69	1.33	243	361	555	-64	263	466
Randgold	-0.07	-0.08	-0.09	-1.59	-1.59	-1.68	134	147	148	85	65	57
Rio Tinto	0.24	0.21	0.17	0.83	0.86	1.35	2366	5250	4655	-1710	2588	2448
South32	0.04	-0.01	-0.06	4.61	-15.50	-2.23	1209	466	592	1209	466	544
Vedanta	0.41	0.37	0.35	0.44	0.32	0.39	-124	-214	847	-635	-358	610

*Source: Deutsche Bank.... *FCF values for NHY, NYR & BOL in NOK m, EUR m & SEK m respectively*

Acacia Mining

Buy

Reuters: ACAAL.L Exchange: LSE Ticker: ACA LN

Gearing to the gold price and a cost turn-around story

Price target (GBP)	340
FTSE 100 INDEX	6,190

The key themes for 2016

- We expect Acacia to deliver increased earnings and free cash flow this year due to the continued turnaround of flagship Bulyanhulu mine. We forecast a steady reduction in the group's AISC from US$1,112/oz in 2015. But with the absolute level staying high relative to the peer group, buying Acacia shares is the way to get operational gearing to the gold price increase we now expect. FCF yields are set to double on our estimates from 2016 to 2017 while the balance sheet is lowly geared.
- The next catalyst for the shares is a 1Q16 update on Bulyanhulu, and hopefully a chance to hear the first impressions of the group's newly appointed COO Mark Marcombe.

Key events:

- 1Q16 production results: 21 April 2016

Valuation and risks:

- Our 12-month TP is based on 1.1x our 2016e NAV, applying a WACC of 5% to life of- mine discounted cash flows and a long-term gold price of US$1,300/oz. Our WACC of 5% is based on a risk free rate of 4%, a market risk premium of 6%, a beta of 0.3x and a 30% target gearing. We apply the 10% premium to our NPV to derive our target price –this reflects the ranking we assign to Acacia within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flows.
- Key downside risks include lower than expected gold prices, higher than expected costs and volatility in the Tanzanian Shilling. The failure to deliver cost and capex cuts as planned, plus the failure to improve grades especially at its Bulyanhulu mine, are two key downside risks. There is a risk of an overhang in the shares from any further sell-down by Barrick Gold's 64% majority stake in Acacia Mining

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Model updated:18 March 2016

Running the numbers

Europe

United Kingdom

Gold

Acacia Mining plc

Reuters: ACAA.L Bloomberg: ACA LN

Buy

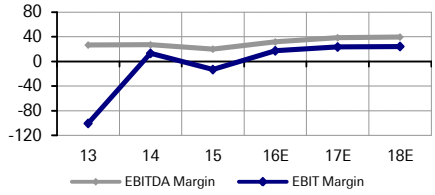
Price (17 Mar 16)	GBP 272.30
Target Price	GBP 340.00
52 Week range	GBP 156.60 - 311.20
Market Cap (m)	GBPm 1,117
	USDm 1,618

Company Profile

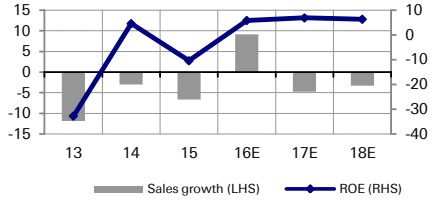
Acacia Mining is a gold exploration and mining company with three operating mines in Tanzania, producing c.800 koz of gold p.a. The company was spun out of parent company Barrick Gold, which is the world's largest gold producer. Acacia aims to grow production to over 1Moz of gold p.a. through a series of brownfield expansions at its existing mines, potential Greenfield projects in Burkina Faso and Kenya, plus potential M&A.

Price Performance

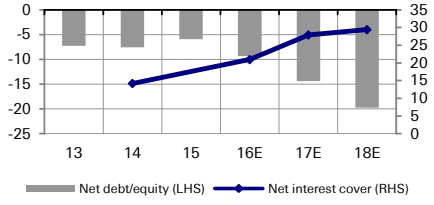
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.30	0.22	-0.02	0.27	0.35	0.35
Reported EPS (USD)	-1.86	0.22	-0.48	0.27	0.35	0.35
DPS (USD)	0.03	0.04	0.04	0.04	0.08	0.14
BVPS (USD)	4.7	4.9	4.4	4.9	5.4	5.8
Weighted average shares (m)	410	410	410	410	410	410
Average market cap (USDm)	1,189	1,573	1,575	1,618	1,618	1,618
Enterprise value (USDm)	1,053	1,426	1,469	1,432	1,302	1,152
Valuation Metrics						
P/E (DB) (x)	9.7	17.4	nm	14.7	11.2	11.2
P/E (Reported) (x)	nm	17.5	nm	14.7	11.2	11.2
P/BV (x)	0.65	0.82	0.61	0.81	0.74	0.68
FCF Yield (%)	nm	2.0	nm	3.6	7.0	9.4
Dividend Yield (%)	1.0	1.1	1.1	1.1	2.1	3.5
EV/Sales (x)	1.1	1.5	1.7	1.5	1.4	1.3
EV/EBITDA (x)	4.1	5.7	8.4	4.8	3.7	3.3
EV/EBIT (x)	nm	11.5	nm	8.7	6.1	5.4
Income Statement (USDm)						
Sales revenue	959	930	868	947	902	873
Gross profit	372	370	276	369	417	415
EBITDA	257	252	175	301	349	346
Depreciation	158	128	142	136	136	133
Amortisation	1,061	0	146	0	0	0
EBIT	-962	124	-113	165	213	214
Net interest income(expense)	-8	-9	-11	-8	-8	-7
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	-970	115	-124	158	206	206
Income tax expense	-188	26	73	47	62	62
Minorities	-17	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-765	90	-197	110	144	144
DB adjustments (including dilution)	887	1	190	0	0	0
DB Net profit	123	90	-7	110	144	144
Cash Flow (USDm)						
Cash flow from operations	187	290	156	248	331	312
Net Capex	-375	-258	-193	-190	-218	-160
Free cash flow	-187	31	-37	58	113	152
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-55	-14	-17	-17	-17	-33
Net inc/(dec) in borrowings	142	0	-14	-28	-28	-28
Other investing/financing cash flows	-19	-6	7	11	11	11
Net cash flow	-119	12	-61	24	79	101
Change in working capital	*0*	*0*	*0*	*0*	*0*	*0*
Balance Sheet (USDm)						
Cash and other liquid assets	282	294	233	257	330	424
Tangible fixed assets	1,281	1,425	1,391	1,445	1,527	1,555
Goodwill/intangible assets	211	211	211	211	211	211
Associates/investments	0	0	0	0	0	0
Other assets	658	653	495	537	518	500
Total assets	2,432	2,583	2,330	2,450	2,587	2,690
Interest bearing debt	142	142	128	71	14	-43
Other liabilities	363	439	415	386	375	370
Total liabilities	505	581	543	457	389	328
Shareholders' equity	1,922	1,997	1,787	1,993	2,198	2,363
Minorities	5	5	0	0	0	0
Total shareholders' equity	1,927	2,002	1,787	1,993	2,198	2,363
Net debt	*-140*	*-152*	*-105*	*-186*	*-316*	*-467*
Key Company Metrics						
Sales growth (%)	-11.8	-3.0	-6.7	9.1	-4.8	-3.3
DB EPS growth (%)	31.2	-26.3	na	na	30.5	0.3
EBITDA Margin (%)	26.8	27.1	20.2	31.8	38.7	39.7
EBIT Margin (%)	-100.3	13.3	-13.0	17.5	23.6	24.5
Payout ratio (%)	nm	19.2	nm	15.4	23.1	39.3
ROE (%)	-32.7	4.6	-10.4	5.8	6.9	6.3
Capex/sales (%)	39.1	26.5	22.2	20.1	24.2	18.4
Capex/depreciation (x)	2.4	1.9	1.4	1.4	1.6	1.2
Net debt/equity (%)	-7.3	-7.6	-5.9	-9.3	-14.4	-19.7
Net interest cover (x)	nm	14.2	nm	21.0	27.9	29.4

Source: Company data, Deutsche Bank estimates

Anglo American

Hold

Reuters: AAL.L Exchange: LSE Ticker: AAL

We need some disposal news

Price target (GBP)	515
FTSE 100 INDEX	6,190

The key themes for 2016:

- **A grand plan from Anglo:** The plan to reduce the core portfolio to 16 diamond, PGM and copper assets from today's 45 mines is broad, deep and, along with further cost-cutting delivery, is designed to navigate Anglo to a more manageable gearing level. The question now of course is can it execute the plan?
- **News on disposals needed by 1H16:** As befits Anglo's recent, disappointing history and the tough commodity backdrop, we still question if it can deliver, at least in a sensible time frame. We need a steady drip feed of disposal proceeds throughout the year – if a sale of Niobium and Phosphates can be delivered by 1H16, followed by nickel or met coal, our view of the execution risks will clearly improve. Successful execution is also predicated on commodity prices staying where they are at worst, which is clearly not a given, or in Anglo's control.
- **The gearing target can be reached**: Since Anglo presented its plan in December 2015, spot prices have improved such that management is now guiding for US$4.8bn of EBITDA and around US$1bn of FCF for 2016. This should mean that Anglo will comfortably achieve its net debt target of US$10bn by year end. Assuming it disposes of US$500m of EBITDA achieving a 5x EBITDA multiple, this would take net debt/EBITDA down to 2.7x as a result. However, assuming all disposals are from non-SA assets (with the most advanced being niobium, phosphates, nickel, met coal), this would still leave net debt/EBITDA at over 5x adjusting for South African EBITDA which should not be considered for debt reduction purposes, without SARB dispensation.
- **Nickel, iron ore, copper prices down, ZAR, AUD and diamond sales volumes up**: Our 2016 EPS moves up 29% due to our increased copper and platinum price forecasts, plus we move our diamonds sales forecast of 23m carats to 25m. Our 2017 EPS estimate comes down 8% due to the cut in our nickel, iron ore and coking coal forecasts, and to factoring in the stronger Rand and Australian dollar forecasts we have recently published.

Key events:

- 1Q16 production results: 21 April 2016

Valuation and risks

- We value Anglo on a sum of the parts basis, using DCF-derived NPV valuations for each division. We use a WACC of 8.7%. To derive our TP we apply a NPV multiple of 0.5x – this reflects the ranking we assign to Anglo within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flows.
- Upside and downside risks include weaker/stronger-than-expected operating currencies (Rand, A$) and higher/lower commodity prices than we forecast, in particular PGMs, copper and iron ore. More specific risks include delays in taking out costs or faster than expected delivery of cost cuts, increased risks regarding security of tenure in South Africa, further delays in the Minas Rio ramp-up, a significant improvement or deterioration in diamond demand, strike/labour disputes in the group's platinum mines and faster or slower than planned non-core asset disposals.

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Model updated:21 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Anglo American

Reuters: AAL.L Bloomberg: AAL LN

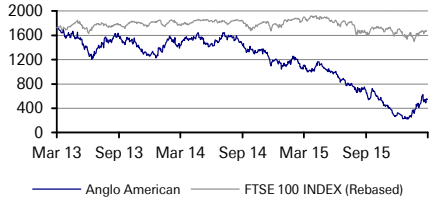
Hold

Price (21 Mar 16)	GBP 549.50
Target Price	GBP 515.00
52 Week range	GBP 221.05 - 1,166.50
Market Cap (m)	GBPm 7,089
	USDm 10,289

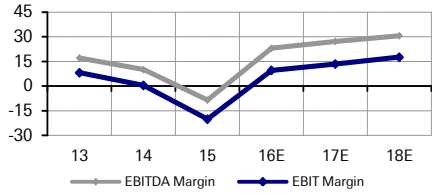
Company Profile

Anglo American plc is a globally diversified mining company. It has interests in diamonds, platinum, met coal, thermal coal, copper, nickel, iron ore and industrial minerals. The Group has operations and developments in Africa, Europe, Australia, and South and North America. The company first listed in London in 1999, and has been disposing of non-core assets to create a more focused mining group. Anglo's diamond and platinum assets differentiate it from the other diversified miners.

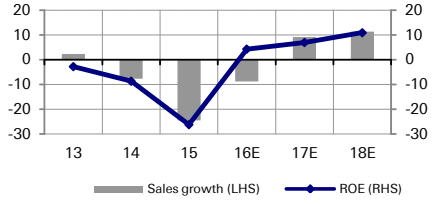
Price Performance



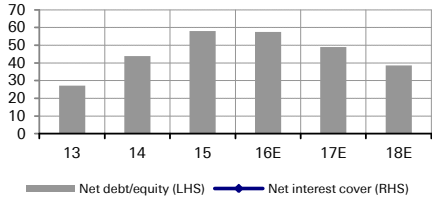
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	2.08	1.73	0.64	0.56	0.96	1.61
Reported EPS (USD)	-0.75	-1.96	-4.36	0.56	0.96	1.61
DPS (USD)	0.85	0.85	0.32	0.00	0.38	0.64
BVPS (USD)	24.7	20.6	12.9	13.4	14.2	15.3
Weighted average shares (m)	1,281	1,284	1,289	1,290	1,290	1,290
Average market cap (USDm)	31,653	30,608	16,721	10,289	10,289	10,289
Enterprise value (USDm)	44,609	48,182	32,993	27,068	25,949	24,206
Valuation Metrics						
P/E (DB) (x)	11.9	13.8	20.2	14.2	8.3	5.0
P/E (Reported) (x)	nm	nm	nm	14.2	8.3	5.0
P/BV (x)	0.88	0.91	0.35	0.59	0.56	0.52
FCF Yield (%)	0.3	nm	nm	nm	16.5	28.1
Dividend Yield (%)	3.4	3.6	2.5	0.0	4.8	8.1
EV/Sales (x)	1.5	1.8	1.6	1.5	1.3	1.1
EV/EBITDA (x)	8.8	17.7	nm	6.3	4.7	3.5
EV/EBIT (x)	18.5	349.1	nm	15.1	9.4	6.1
Income Statement (USDm)						
Sales revenue	29,342	27,073	20,455	18,652	20,365	22,657
Gross profit	5,045	2,729	-1,731	4,296	5,550	6,961
EBITDA	5,045	2,729	-1,731	4,296	5,550	6,961
Depreciation	2,638	2,591	2,381	2,501	2,800	2,965
Amortisation	0	0	0	0	0	0
EBIT	2,407	138	-4,112	1,795	2,750	3,996
Net interest income(expense)	271	242	172	33	25	20
Associates/affiliates	168	208	-221	95	131	128
Exceptionals/extraordinaries	-469	-385	-1,278	0	0	0
Other pre-tax income/(expense)	-677	-462	-15	-720	-749	-704
Profit before tax	1,700	-259	-5,454	1,204	2,157	3,441
Income tax expense	1,274	1,265	388	273	533	922
Minorities	1,387	989	-218	206	383	443
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-961	-2,513	-5,624	725	1,241	2,076
DB adjustments (including dilution)	3,634	4,730	6,451	0	0	0
DB Net profit	2,673	2,217	827	725	1,241	2,076
Cash Flow (USDm)						
Cash flow from operations	6,078	5,435	3,268	2,675	4,067	5,574
Net Capex	-5,985	-5,903	-4,023	-2,982	-2,372	-2,683
Free cash flow	93	-468	-755	-307	1,695	2,891
Equity raised/(bought back)	14	-97	-31	8	8	8
Dividends paid	-2,237	-1,922	-1,320	-83	-413	-1,023
Net inc/(dec) in borrowings	1,043	1,825	1,378	-1,639	-2,613	0
Other investing/financing cash flows	-148	-179	1,144	0	0	0
Net cash flow	-1,235	-841	416	-2,020	-1,323	1,876
Change in working capital	*0*	*0*	*0*	*0*	*0*	*0*
Balance Sheet (USDm)						
Cash and other liquid assets	7,704	6,748	6,895	4,875	3,552	5,427
Tangible fixed assets	41,505	38,475	29,621	30,287	29,962	29,783
Goodwill/intangible assets	4,083	3,912	3,394	3,394	3,394	3,394
Associates/investments	7,548	6,775	2,663	2,663	2,663	2,663
Other assets	10,325	10,100	8,291	8,456	8,829	8,983
Total assets	71,165	66,010	50,864	49,675	48,400	50,250
Interest bearing debt	17,848	20,859	19,281	17,644	15,033	15,035
Other liabilities	15,953	12,974	10,241	9,832	9,950	10,295
Total liabilities	33,801	33,833	29,522	27,476	24,983	25,330
Shareholders' equity	31,671	26,417	16,569	17,302	18,351	19,725
Minorities	5,693	5,760	4,773	4,896	5,066	5,195
Total shareholders' equity	37,364	32,177	21,342	22,199	23,417	24,920
Net debt	*10,144*	*14,111*	*12,386*	*12,769*	*11,481*	*9,608*
Key Company Metrics						
Sales growth (%)	2.3	-7.7	-24.4	-8.8	9.2	11.3
DB EPS growth (%)	-8.4	-17.0	-62.8	-12.4	71.0	67.3
EBITDA Margin (%)	17.2	10.1	-8.5	23.0	27.3	30.7
EBIT Margin (%)	8.2	0.5	-20.1	9.6	13.5	17.6
Payout ratio (%)	nm	nm	nm	0.0	40.0	40.0
ROE (%)	-2.8	-8.7	-26.2	4.3	7.0	10.9
Capex/sales (%)	20.9	22.1	19.8	16.0	11.6	11.8
Capex/depreciation (x)	2.3	2.3	1.7	1.2	0.8	0.9
Net debt/equity (%)	27.1	43.9	58.0	57.5	49.0	38.6
Net interest cover (x)	nm	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

Antofagasta

Hold

Reuters: Anto.L Exchange: LSE Ticker: Anto

Balance sheet protection mode

Price target (GBP)	450
FTSE 100 INDEX	6,190

The key themes for 2016:

- **Few positive catalysts:** Whilst it's not fair to say that Antofagasta scrapped its final dividend, the fact the Board shied away from paying more than the minimum 35% of EPS (all paid at the Interim) sends a strong message of "we're not out of the woods yet". We would agree. FY15 EBITDA was lower than our forecasts due to higher net cash costs which are unlikely to benefit from further strong deflationary tailwinds into 2016 and capex remains high despite the deferral of some projects for a year. We, and Antofagasta, expect the copper price to come off its recent highs, and in that environment we see few positive catalysts for the shares.
- **Protecting the balance sheet:** Management commented that it would be free cash flow neutral if it delivered its 2016 production, cost and capex guidance at the copper price which has prevailed year to date. That's a lot to get right for breaking even, although it should be easier with two new mines ramping up throughout the year. We expect production to come in the middle of the 710-740kt guidance range (DBe 722kt) and cash costs net of by-product credits to be US$1.50/lb, compared with guidance for US$1.30/lb based on the 740kt volume target. We've trimmed our 2016 capex forecast from US$1.1bn down to US$1bn (ex-Zaldivar), and capex doesn't drop much below that level in the medium term. As a result, Antofagasta will likely keep a small new debt position for now, and dividends will play second fiddle to managing that in our view.

Key events:

- 1Q16 production results: 27 April 2016

Valuation and risks:

- Our 12-month price target is set at 10% premium to our DCF valuation to reflect the ranking we assign to Antofagasta within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow. We use a WACC of 10.5% (reflects a cost of equity (Beta 1.2) of 11.2%, cost of debt (post tax) of 6.2%, long-term gearing of 10% and a tax rate of 25%.
- Key risks include higher- or lower-than-expected copper, gold, and molybdenum prices than our estimates, and a weaker-or stronger-than expected Chilean Peso than we currently forecast. Grades may be significantly higher or lower than we assume at the main Los Pelambres mine, and cost savings may be higher or lower than guided.

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Model updated:16 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Antofagasta PLC

Reuters: ANTO.L Bloomberg: ANTO LN

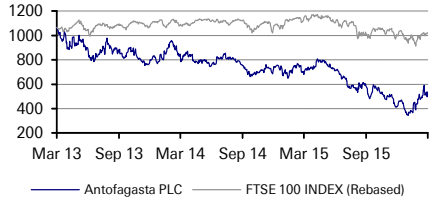
Hold

Price (17 Mar 16)	GBP 537.50
Target Price	GBP 450.00
52 Week range	GBP 346.10 - 807.50
Market Cap (m)	GBPm 5,299
	USDm 7,678

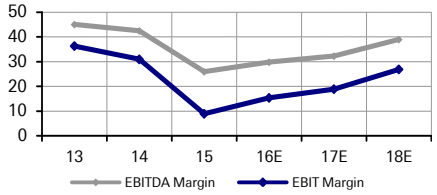
Company Profile

Antofagasta plc is one of the world's top ten copper producers with operations centered in Chile. The company also has diversified holdings in the transport, port energy and water industries, all as a way of hedging input costs. The Group's mining operations however represent the core of earnings (c.90%) and specialise in copper, via their Los Pelambres, El Tesoro, Esperanza and Michilla mines. Their transport operations encompass an extensive rail network, which serves the mining region of Northern Chile. The company has an extensive portfolio of early stage exploration and development projects across the globe.

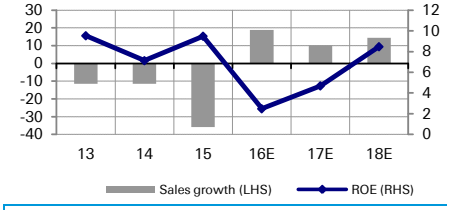
Price Performance



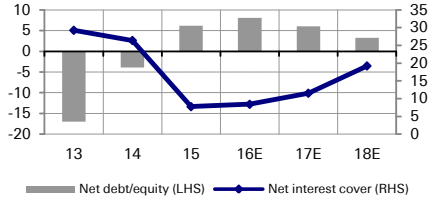
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.67	0.47	0.01	0.17	0.33	0.62
Reported EPS (USD)	0.67	0.47	0.62	0.17	0.33	0.62
DPS (USD)	0.95	0.22	0.03	0.06	0.11	0.22
BVPS (USD)	6.8	6.3	6.7	6.8	7.1	7.5
Weighted average shares (m)	986	986	986	986	986	986
Average market cap (USDm)	14,525	12,813	9,645	7,678	7,678	7,678
Enterprise value (USDm)	17,032	16,477	14,151	12,353	12,198	11,967
Valuation Metrics						
P/E (DB) (x)	22.0	27.9	nm	46.1	23.8	12.6
P/E (Reported) (x)	22.0	27.9	15.9	46.1	23.8	12.6
P/BV (x)	2.00	1.88	1.03	1.14	1.10	1.03
FCF Yield (%)	2.2	1.7	nm	nm	2.6	4.0
Dividend Yield (%)	6.4	1.7	0.3	0.8	1.5	2.8
EV/Sales (x)	2.9	3.1	4.2	3.1	2.7	2.4
EV/EBITDA (x)	6.3	7.3	16.1	10.3	8.5	6.0
EV/EBIT (x)	7.8	10.0	46.5	19.9	14.5	8.7
Income Statement (USDm)						
Sales revenue	5,972	5,290	3,395	4,034	4,444	5,083
Gross profit	2,702	2,222	891	1,202	1,434	1,981
EBITDA	2,690	2,246	881	1,202	1,434	1,981
Depreciation	518	606	576	581	592	612
Amortisation	0	0	0	0	0	0
EBIT	2,172	1,640	304	622	842	1,369
Net interest income(expense)	-74	-62	-39	-74	-73	-71
Associates/affiliates	-14	-4	-6	-23	30	79
Exceptionals/extraordinaries	0	0	603	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	2,084	1,573	259	525	799	1,377
Income tax expense	844	723	160	202	288	489
Minorities	580	391	94	156	189	278
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	660	460	608	166	322	611
DB adjustments (including dilution)	0	0	-603	0	0	0
DB Net profit	660	460	6	166	322	611
Cash Flow (USDm)						
Cash flow from operations	1,763	1,804	393	807	1,003	1,444
Net Capex	-1,450	-1,585	-1,127	-954	-800	-1,137
Free cash flow	313	219	-734	-147	203	307
Equity raised/(bought back)	110	0	15	0	0	0
Dividends paid	-1,437	-1,377	-207	-31	-44	-71
Net inc/(dec) in borrowings	-528	1,000	438	0	0	0
Other investing/financing cash flows	345	419	451	-5	-5	-5
Net cash flow	-1,198	262	-38	-183	154	231
Change in working capital	*-43*	*140*	*253*	*-103*	*-95*	*-41*
Balance Sheet (USDm)						
Cash and other liquid assets	2,685	2,375	1,732	1,548	1,703	1,934
Tangible fixed assets	7,425	8,227	8,601	8,974	9,179	9,702
Goodwill/intangible assets	133	119	150	150	150	150
Associates/investments	453	808	1,833	1,833	1,833	1,833
Other assets	1,694	1,287	1,222	1,632	1,881	1,987
Total assets	12,390	12,815	13,537	14,137	14,746	15,605
Interest bearing debt	1,212	2,059	2,257	2,257	2,257	2,257
Other liabilities	2,514	2,721	2,580	2,911	3,064	3,130
Total liabilities	3,726	4,780	4,837	5,168	5,321	5,387
Shareholders' equity	6,725	6,174	6,646	6,750	6,986	7,430
Minorities	1,939	1,861	1,873	2,038	2,258	2,608
Total shareholders' equity	8,664	8,035	8,519	8,788	9,243	10,037
Net debt	*-1,473*	*-315*	*525*	*709*	*554*	*323*
Key Company Metrics						
Sales growth (%)	-11.4	-11.4	-35.8	18.8	10.2	14.4
DB EPS growth (%)	-52.6	-30.3	-98.8	2,922.3	93.7	89.5
EBITDA Margin (%)	45.0	42.4	25.9	29.8	32.3	39.0
EBIT Margin (%)	36.4	31.0	9.0	15.4	18.9	26.9
Payout ratio (%)	142.0	46.2	5.0	35.0	35.0	35.0
ROE (%)	9.5	7.1	9.5	2.5	4.7	8.5
Capex/sales (%)	24.3	30.0	33.2	23.6	18.0	22.4
Capex/depreciation (x)	2.8	2.6	2.0	1.6	1.4	1.9
Net debt/equity (%)	-17.0	-3.9	6.2	8.1	6.0	3.2
Net interest cover (x)	29.3	26.4	7.8	8.4	11.6	19.2

Source: Company data, Deutsche Bank estimates

Aquarius Platinum Limited

Buy

Reuters: AQP.L Exchange: LSE Ticker: AQP

Under offer

Price target (GBp)	13.50
FTSE 100 INDEX	6,190

The key theme for 2016:

We have a Buy recommendation for Aquarius as Kroondal is running at above nameplate, ensuring maximum operating cash flow; and the group has built up a healthy cash pile from the sale of Everest for R450m to Northam, the sale of another non-core asset, a rights issue and the delivery of corporate cost savings. Sibanye Gold bid US$294m for the entire issued share capital of Aquarius Platinum on 6 October 2015. On a per share basis, this is USc19.5, a 60.3% premium to AQP's closing price on 5 October. The offer has been unanimously recommended by the Aquarius Board and the deal was approved by the South African Competition Commission in mid-March 2016. The two companies are now in a process to confirm the Conditions Fulfillment Date.

Key events:

- 3Q16 operating results: 28 April 2016

Valuation and risks:

Sibanye Gold has offered US$294m for Aquarius' equity. We think this will be a cap for the share price and we set our target price at the offer price of USc19.5 which translates to GBp13.5 per share. The downside risk to our price target is a failure of the bid, although all approvals have now been received and completion of the deal should take place by the end of April 2016 so this risk is minimal in our view.

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Model updated:18 March 2016

Running the numbers

Sub-Saharan Africa

South Africa

Platinum

Aquarius Platinum

Reuters: AQP.L Bloomberg: AQP LN

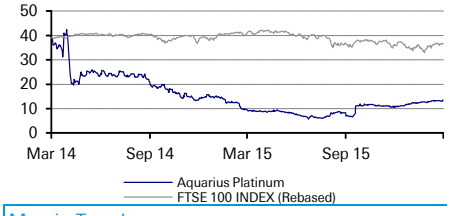
Buy

Price (17 Mar 16)	GBP 13.50
Target Price	GBP 13.50
52 Week range	GBP 5.65 - 13.50
Market Cap (m)	GBPm 201
	USDm 291

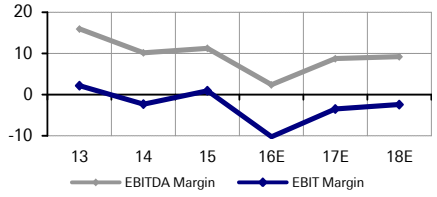
Company Profile

Aquarius Platinum Limited is a platinum group metals (PGM) producer in southern Africa with listings on the Australian and London stock exchanges. Through its wholly-owned subsidiary Aquarius Platinum South Africa, the company operates the Kroondal mine and a tailing retreatment facility in South Africa. The company also has a 50% stake in the Mimosa Platinum Mine in Zimbabwe. Aquarius is under cash offer from Sibanye, with the board recommending the offer be accepted.

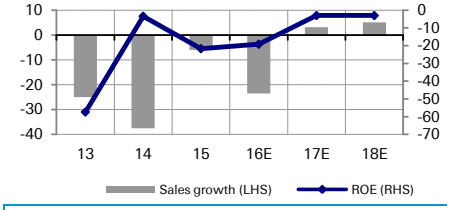
Price Performance



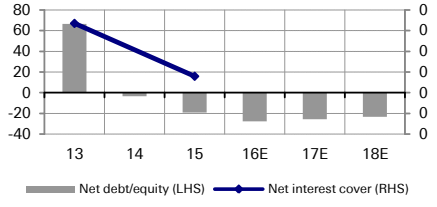
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 30-Jun	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	-0.11	-0.01	-0.03	-0.01	-0.01	0.00
Reported EPS (USD)	-0.58	-0.01	-0.06	-0.04	-0.01	0.00
DPS (USD)	0.00	0.00	0.00	0.00	0.00	0.00
BVPS (USD)	0.6	0.5	0.2	0.2	0.2	0.1
Weighted average shares (m)	480	943	1,461	1,487	1,487	1,487
Average market cap (USDm)	352	597	349	291	291	291
Enterprise value (USDm)	545	580	280	217	229	241
Valuation Metrics						
P/E (DB) (x)	nm	nm	nm	nm	nm	nm
P/E (Reported) (x)	nm	nm	nm	nm	nm	nm
P/BV (x)	0.97	0.79	0.44	1.09	1.21	1.35
FCF Yield (%)	nm	nm	nm	6.1	2.5	2.7
Dividend Yield (%)	0.0	0.0	0.0	0.0	0.0	0.0
EV/Sales (x)	1.5	2.5	1.3	1.3	1.3	1.3
EV/EBITDA (x)	9.2	24.4	11.3	54.1	15.2	14.4
EV/EBIT (x)	66.1	nm	129.4	nm	nm	nm
Income Statement (USDm)						
Sales revenue	373	233	219	168	173	182
Gross profit	74	31	31	15	27	29
EBITDA	60	24	25	4	15	17
Depreciation	51	29	23	21	21	21
Amortisation	0	0	0	0	0	0
EBIT	8	-5	2	-17	-6	-4
Net interest income(expense)	-31	-28	-15	-7	0	0
Associates/affiliates	0	5	-48	-57	-4	-4
Exceptionals/extraordinaries	-281	-2	-9	-9	0	0
Other pre-tax income/(expense)	-21	18	-14	2	0	0
Profit before tax	-324	-13	-84	-89	-10	-9
Income tax expense	-44	1	8	-28	-3	-3
Minorities	-1	0	-2	-1	1	1
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-279	-13	-90	-60	-8	-7
DB adjustments (including dilution)	226	2	39	51	0	0
DB Net profit	-53	-11	-51	-9	-8	-7
Cash Flow (USDm)						
Cash flow from operations	8	21	18	29	18	20
Net Capex	-54	-28	-23	-11	-11	-12
Free cash flow	-45	-7	-5	18	7	8
Equity raised/(bought back)	0	218	-1	0	0	0
Dividends paid	0	0	0	0	0	0
Net inc/(dec) in borrowings	-10	-1	2	-123	0	0
Other investing/financing cash flows	-22	26	72	-15	-20	-20
Net cash flow	-77	236	67	-120	-12	-11
Change in working capital	*-4*	*-43*	*0*	*0*	*0*	*0*
Balance Sheet (USDm)						
Cash and other liquid assets	103	137	196	76	64	52
Tangible fixed assets	261	100	101	77	67	58
Goodwill/intangible assets	59	54	18	1	1	1
Associates/investments	0	230	151	91	87	83
Other assets	341	196	129	110	110	110
Total assets	765	717	594	355	329	304
Interest bearing debt	300	120	127	3	3	3
Other liabilities	168	123	110	86	86	86
Total liabilities	468	244	237	89	89	89
Shareholders' equity	297	474	357	266	240	215
Minorities	0	0	0	0	0	0
Total shareholders' equity	297	474	357	266	240	215
Net debt	*197*	*-17*	*-69*	*-73*	*-61*	*-50*
Key Company Metrics						
Sales growth (%)	-25.0	-37.6	-5.9	-23.6	3.1	5.1
DB EPS growth (%)	64.7	89.8	-207.1	83.1	13.9	9.1
EBITDA Margin (%)	15.9	10.2	11.3	2.4	8.7	9.2
EBIT Margin (%)	2.2	-2.3	1.0	-10.2	-3.4	-2.4
Payout ratio (%)	nm	nm	nm	nm	nm	nm
ROE (%)	-57.3	-3.4	-21.7	-19.1	-3.0	-3.0
Capex/sales (%)	14.4	12.0	10.6	6.9	6.4	6.4
Capex/depreciation (x)	1.0	1.0	1.0	0.5	0.5	0.6
Net debt/equity (%)	66.4	-3.5	-19.3	-27.5	-25.5	-23.2
Net interest cover (x)	0.3	nm	0.1	nm	nm	nm

Source: Company data, Deutsche Bank estimates

BHP Billiton Plc

Hold

Reuters: BLT.L Exchange: LSE Ticker: BLT

Pursuing Buy over Build?

Price target (GBP)	900
FTSE 100 INDEX	6,190

The key themes for 2016:

- **Balance sheet protected…** In a bid to protect its balance sheet and retain a single A credit rating, BHP cut its dividend in February and adopted a 50% payout, amounting to a reduction in yearly cash outlay of US$4bn. It also guided to a further reduction in planned capex of US$3.5bn.
- **…but where's the growth?** In our view, BHP is under-investing in its organic growth options and we think acquisitions may be preferred. Despite showing growth projects with a collective value of over US$40bn and targeted returns of over 20% at its interim results, the 5% growth target has been dropped which, in our view, is an admission of going ex-growth. The US$5bn capex target for FY17 is not far from SIB levels when including conventional oil capex. Management admitted it now appears more compelling to Buy than Build. It appears that BHP may be sizing up copper and oil deals.
- **Limited potential acquisition targets:** Whilst BHP has opened the door on potentially acquiring companies, we believe the focus at this stage remains firmly on asset acquisitions. Screening US corporates for geographic exposure within offshore oil, we think that the generally high level of exposure to unconventional is likely to discourage BHP, unless valuations deteriorated significantly further making the owners of the Tier 1 assets more digestible. On an asset basis, we think the Gulf of Mexico offers few opportunities which meet BHP's size criteria. Whilst we believe Brazil is more interesting, and that BHP could seek an operating role in the late exploration stage, given that only PBR can operate pre-salt assets, this leaves two identified potential targets in BM-C-33, where it may prove challenging to displace Statoil as the newly appointed operator, and Tartaruga.
- **What's BHP's firepower?** A price tag of US$3-5bn is most likely. We think BHP would be comfortable with a downgrade of its credit rating from A to A- . The latter would imply a medium-term FFO/debt level of ~35%– that is, our FY17e US$14bn EBITDA would need to drop to US$8bn (US$5/t change in Fe or US25c in Cu would take off US$1bn).

Key events:

- 3Q16 operational results: 20 April 2016

Valuation and risks:

- We value BHP using life-of-mine cash flows with a WACC of 9.3%. Our price target is set at a 10% discount to our NPV valuation to reflect the ranking we assign to BHP Billiton within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow.
- Key risks include variance in commodity prices and exchange rates vs. our estimates. Downside risks include delivery risk on longer-dated growth projects. Sustained higher US onshore oil volumes could limit upside in both the oil price and US nat gas price. Upside risks include weaker currencies, and higher oil, copper and iron ore prices from recovering demand, and supply cuts due to low prices or supply constraints (especially in copper).

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Model updated:21 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

BHP Billiton Plc

Reuters: BLT.L Bloomberg: BLT LN

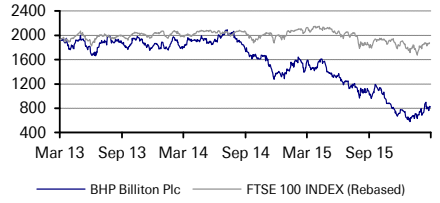
Hold

Price (21 Mar 16)	GBP 819.50
Target Price	GBP 900.00
52 Week range	GBP 580.90 - 1,610.50
Market Cap (m)	GBPm 43,607
	USDm 63,298

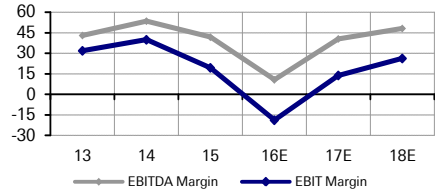
Company Profile

BHP Billiton Plc is an international resources company. The company's principal business lines are mineral and petroleum production, including coal (thermal and coking), iron ore, aluminium, manganese, nickel, copper concentrate and cathode, diamonds, and oil & gas (conventional and unconventional, LNG).

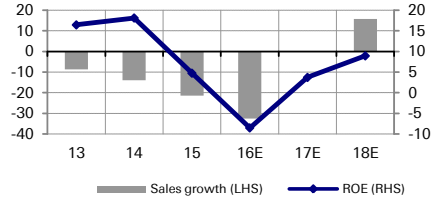
Price Performance



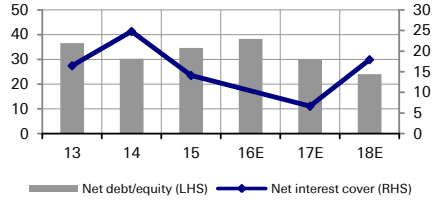
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 30-Jun	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	2.29	2.47	1.62	0.18	0.40	0.96
Reported EPS (USD)	2.10	2.54	0.64	-0.96	0.40	0.96
DPS (USD)	1.16	1.21	1.24	0.30	0.20	0.48
BVPS (USD)	13.3	14.9	12.2	10.6	10.8	10.7
Weighted average shares (m)	5,321	5,321	5,318	5,321	5,321	5,321
Average market cap (USDm)	163,671	162,159	134,883	63,298	63,298	63,298
Enterprise value (USDm)	193,925	191,748	162,133	90,311	85,894	82,791
Valuation Metrics						
P/E (DB) (x)	13.4	12.3	15.7	67.5	30.0	12.4
P/E (Reported) (x)	14.6	12.0	39.5	nm	30.0	12.4
P/BV (x)	1.93	2.17	1.61	1.12	1.10	1.11
FCF Yield (%)	0.2	6.8	5.7	7.6	10.5	10.5
Dividend Yield (%)	3.8	4.0	4.9	2.5	1.7	4.0
EV/Sales (x)	2.9	3.4	3.6	3.0	2.8	2.4
EV/EBITDA (x)	6.8	6.3	8.7	28.2	7.0	4.9
EV/EBIT (x)	9.2	8.5	18.7	nm	20.6	9.0
Income Statement (USDm)						
Sales revenue	65,953	56,762	44,636	30,143	30,144	34,897
Gross profit	24,433	29,140	18,160	2,955	12,223	16,807
EBITDA	28,380	30,365	18,656	3,206	12,223	16,807
Depreciation	7,378	7,716	9,986	8,883	8,044	7,645
Amortisation	0	0	0	0	0	0
EBIT	21,002	22,649	8,670	-5,677	4,179	9,163
Net interest income(expense)	-1,276	-914	-614	-772	-628	-511
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	-39	-138	-358
Profit before tax	19,726	21,735	8,056	-6,488	3,413	8,294
Income tax expense	6,906	6,780	3,666	-1,386	1,160	2,820
Minorities	1,597	1,392	968	38	134	366
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	11,223	13,563	3,422	-5,140	2,118	5,108
DB adjustments (including dilution)	985	-385	5,199	6,081	0	0
DB Net profit	12,208	13,178	8,621	941	2,118	5,108
Cash Flow (USDm)						
Cash flow from operations	20,154	25,364	19,296	11,881	11,523	12,047
Net Capex	-19,905	-14,346	-11,625	-7,059	-4,905	-5,375
Free cash flow	249	11,018	7,671	4,822	6,618	6,672
Equity raised/(bought back)	21	14	9	0	0	0
Dividends paid	-6,167	-6,387	-6,498	-4,120	-1,130	-1,758
Net inc/(dec) in borrowings	7,157	-1,011	-728	7,007	1,988	-800
Other investing/financing cash flows	-364	224	-649	-732	-799	-1,083
Net cash flow	896	3,858	-195	6,976	6,677	3,031
Change in working capital	*-7,514*	*116*	*-187*	*1,814*	*115*	*-2,722*
Balance Sheet (USDm)						
Cash and other liquid assets	5,677	8,803	6,753	13,729	20,406	23,437
Tangible fixed assets	100,565	108,787	94,072	84,428	81,289	79,019
Goodwill/intangible assets	5,496	5,439	4,292	4,358	4,646	4,949
Associates/investments	1,880	2,436	2,944	2,652	2,652	2,652
Other assets	25,560	25,948	16,519	14,331	14,285	15,421
Total assets	139,178	151,413	124,580	119,498	123,278	125,477
Interest bearing debt	33,187	34,589	31,170	37,541	39,529	38,729
Other liabilities	30,700	31,442	22,865	19,760	20,226	23,060
Total liabilities	63,887	66,031	54,035	57,301	59,755	61,789
Shareholders' equity	70,667	79,143	64,768	56,344	57,398	56,835
Minorities	4,624	6,239	5,777	5,853	6,126	6,854
Total shareholders' equity	75,291	85,382	70,545	62,197	63,524	63,689
Net debt	*27,510*	*25,786*	*24,417*	*23,812*	*19,123*	*15,292*
Key Company Metrics						
Sales growth (%)	-8.7	-13.9	-21.4	-32.5	0.0	15.8
DB EPS growth (%)	-28.6	7.9	-34.5	-89.1	125.1	141.2
EBITDA Margin (%)	43.0	53.5	41.8	10.6	40.5	48.2
EBIT Margin (%)	31.8	39.9	19.4	-18.8	13.9	26.3
Payout ratio (%)	55.0	47.5	192.7	nm	49.9	49.9
ROE (%)	16.4	18.1	4.8	-8.5	3.7	8.9
Capex/sales (%)	33.7	26.8	26.8	23.8	16.3	15.4
Capex/depreciation (x)	3.0	2.0	1.2	0.8	0.6	0.7
Net debt/equity (%)	36.5	30.2	34.6	38.3	30.1	24.0
Net interest cover (x)	16.5	24.8	14.1	nm	6.7	17.9

Source: Company data, Deutsche Bank estimates

Boliden AB

Buy

Reuters: BOL.ST Exchange: STO Ticker: BOL

A sound strategy in place

Price target (SEK)	165
OMX Stockholm Index	1,391

The key themes for 2016

- **The acquisition of Kevitsa is a sound countercyclical investment**: On 10 March 2016, Boliden announced its intent to acquire the Kevitsa mine from First Quantum for US$712m in cash (17x 2015 ebitda). This compares well with the mine's book value of US$845m and the capex by First Quantum at Kevitsa of US$1.1bn from 2008 to 2015. In our view, this is a sound deal which complements Boliden's portfolio and positions the group to deliver more free cash when the cycle turns. Kevitsa is a 40/40/20 nickel/copper/pgms mine located in Finland where Boliden already operates the Harjavalta nickel/copper smelter. There will be transportation and other logistics synergies.
- **Boliden is expanding its zinc smelter production.** Boliden hosted a site visit at the Odda zinc smelter in Norway in March-16. The company seeks to expand annual production at Odda to 200kt from 166kt in 2015 with ramp-up starting in 2Q17. The smelter is low-cost and accounts for 35% of Boliden zinc smelters production and 40% zinc smelters ebitda on our 2016 estimates. We expect Odda smelter ebitda to reach c.SEK800m in 2018 from c.SEK550m 2016 DBe on higher production, better zinc prices and cost reduction efforts. Boliden derives a little more than half of its total ebitda from its smelters.
- **Target price and 2016/17 EPS revised on higher group capex and lower production at Aitik**. The stability of the crushers remains an ongoing issue at the Aitik mine and we have revised our production forecasts as a consequence. We now expect milled ore in 2016 and 2017 to remain flat around 36mt. We also expect higher capital expenditures at the group level up to SEK4b and SEK4.5b from SEK 3.7b and SEK2.6b in 2016 and 2017 resp. The increase comes as a result of the crusher replacement at Aitik to reach 45mt milled ore production and expansion programmes at Harjavalta, Odda and Ronnskar. We have revised our target price down to SEK165 from SEK180 and our 2016/17 EPS forecasts have decreased 37% to SEK11.7 (18.5) and 36% to SEK14.9 (23.2) previously.
- **Boliden maintains a differentiating position with a solid balance sheet**. Boliden has maintained a strong balance sheet throughout the cycle and we believe this should continue with a gearing of 32% and net debt to ebitda of 1.2x on our 2016 estimates post Kevitsa.

Key catalysts for the stock:

- 1Q16 interim report 3 May 2016
- Regulatory approval of Kevitsa: update expected during May-16.
- Positive announcements on the Aitik crusher replacement and/or the Odda smelter extension.

Valuation and risks:

Our TP is based on our DCF-derived NPV (WACC of 8.7% based on cost of equity 11.3%, cost of debt 6.5%, tax rate of 28% and target gearing 40%). We apply a 20% premium to our NPV to derive our TP to reflect its relative performance. Risks include varied metal prices from expectations and movements in the SEK relative to our expectations. From an operational perspective, lower volumes from the Aitik expansion is a key downside risk. Cancellation or any delays in regulatory approval of the Kevitsa acquisition is also a risk.

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Model updated:18 March 2016

Running the numbers

Europe

Sweden

Metals & Mining

Boliden AB

Reuters: BOL.ST Bloomberg: BOL SS

Buy

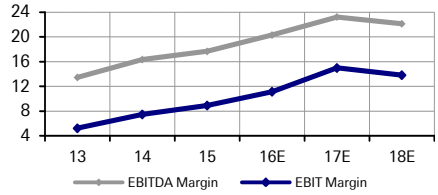
Price (21 Mar 16)	SEK 132.50
Target Price	SEK 165.00
52 Week range	SEK 102.90 - 198.50
Market Cap (m)	SEKm 36,240
	USDm 4,414

Company Profile

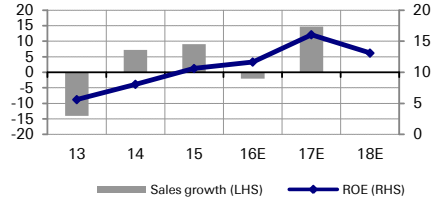
Boliden is an international mining and smelting company which mines, smelts and refines zinc and copper. By-products include lead, gold, silver, among others. The group operations in five countries Sweden, Finland, Norway, Ireland and Netherlands.

Price Performance

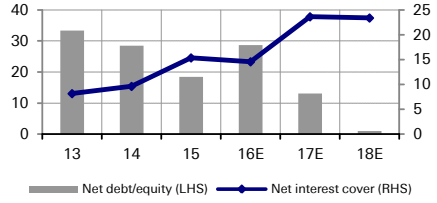
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (SEK)	4.72	6.95	9.66	11.68	18.51	17.04
Reported EPS (SEK)	4.72	6.95	9.66	11.68	18.51	17.04
DPS (SEK)	1.75	2.25	3.25	4.00	6.00	6.00
BVPS (SEK)	84.4	87.7	94.4	106.0	124.6	135.6
Weighted average shares (m)	274	274	274	274	274	274
Average market cap (SEKm)	27,295	29,169	42,865	36,240	36,240	36,240
Enterprise value (SEKm)	35,463	36,234	47,984	44,926	41,055	36,985
Valuation Metrics						
P/E (DB) (x)	21.1	15.4	16.2	11.3	7.2	7.8
P/E (Reported) (x)	21.1	15.4	16.2	11.3	7.2	7.8
P/BV (x)	1.17	1.43	1.51	1.25	1.06	0.98
FCF Yield (%)	nm	5.4	6.0	nm	10.7	15.8
Dividend Yield (%)	1.8	2.1	2.1	3.0	4.5	4.5
EV/Sales (x)	1.0	1.0	1.2	1.1	0.9	0.8
EV/EBITDA (x)	7.7	6.0	6.7	5.6	3.9	3.7
EV/EBIT (x)	19.7	13.1	13.4	10.2	6.1	5.9
Income Statement (SEKm)						
Sales revenue	34,408	36,890	40,243	39,425	45,206	45,123
Gross profit	4,634	6,035	7,113	8,013	10,509	9,995
EBITDA	4,634	6,035	7,113	8,013	10,509	9,995
Depreciation	2,831	3,276	3,522	3,614	3,730	3,752
Amortisation	0	0	0	0	0	0
EBIT	1,803	2,759	3,591	4,399	6,779	6,242
Net interest income(expense)	-221	-287	-234	-302	-287	-267
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	1,582	2,472	3,357	4,097	6,492	5,975
Income tax expense	287	572	714	901	1,428	1,315
Minorities	3	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	1,292	1,900	2,643	3,195	5,064	4,661
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	1,292	1,900	2,643	3,195	5,064	4,661
Cash Flow (SEKm)						
Cash flow from operations	3,504	5,788	6,235	6,640	8,119	8,720
Net Capex	-4,971	-4,209	-3,646	-10,206	-4,248	-3,008
Free cash flow	-1,467	1,579	2,589	-3,566	3,871	5,711
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-1,094	-479	-615	0	0	-1,641
Net inc/(dec) in borrowings	2,154	-876	-1,887	2,500	-1,500	0
Other investing/financing cash flows	-1	2	-23	0	0	0
Net cash flow	-408	226	64	-1,066	2,371	4,070
Change in working capital	*-546*	*489*	*-728*	*-169*	*-674*	*307*
Balance Sheet (SEKm)						
Cash and other liquid assets	611	865	923	-143	2,228	6,298
Tangible fixed assets	27,348	28,623	28,372	34,964	35,483	34,739
Goodwill/intangible assets	3,130	3,516	3,366	3,366	3,366	3,366
Associates/investments	33	45	48	48	48	48
Other assets	10,719	10,817	10,313	10,776	12,616	11,778
Total assets	41,841	43,866	43,022	49,011	53,741	56,229
Interest bearing debt	8,307	7,683	5,677	8,177	6,677	6,677
Other liabilities	10,459	12,208	11,537	11,830	12,996	12,465
Total liabilities	18,766	19,891	17,214	20,007	19,673	19,142
Shareholders' equity	23,075	23,975	25,808	29,003	34,067	37,087
Minorities	0	0	0	0	0	0
Total shareholders' equity	23,075	23,975	25,808	29,003	34,067	37,087
Net debt	*7,696*	*6,818*	*4,754*	*8,320*	*4,449*	*379*
Key Company Metrics						
Sales growth (%)	-14.0	7.2	9.1	-2.0	14.7	-0.2
DB EPS growth (%)	-60.5	47.1	39.1	20.9	58.5	-8.0
EBITDA Margin (%)	13.5	16.4	17.7	20.3	23.2	22.1
EBIT Margin (%)	5.2	7.5	8.9	11.2	15.0	13.8
Payout ratio (%)	37.1	32.4	33.6	34.2	32.4	35.2
ROE (%)	5.6	8.1	10.6	11.7	16.1	13.1
Capex/sales (%)	14.4	11.4	9.1	25.9	9.4	6.7
Capex/depreciation (x)	1.8	1.3	1.0	2.8	1.1	0.8
Net debt/equity (%)	33.4	28.4	18.4	28.7	13.1	1.0
Net interest cover (x)	8.2	9.6	15.3	14.6	23.6	23.4

Source: Company data, Deutsche Bank estimates

Ferrexpo Plc

Buy

Reuters: FXPO.L Exchange: LSE Ticker: FXPO

Generating cash and working on the balance sheet

Price target (GBP)	110
FTSE 100 INDEX	6,190

Our investment case:

1. **Competing investment forces:** Ferrexpo has very well run operations and has maintained an EBITDA margin of 33% despite the collapse in the iron ore prices through quality upgrades and cost cutting initiatives. The company remains cash generative and undervalued based on the cash generation. Offsetting this is the fact that the collapse in its Ukrainian bank and subsequent loss of US$170m has left the company a very low cash position (US$35m at year-end 2016) – while readily manageable, there is not a lot of buffer for contingencies.

2. **Growth and quality step up completed.** Ferrexpo has completed both its production and quality ramp-up and can now produce ~12Mtpa of 65% grade iron ore pellets which positions its offering well above its European competitors and achieve above average premiums in the market.

3. **Debt refinancing still needed:** The company was in the process of refinancing its debt before the collapse of its transactional bank. The loss of more than half of its cash position has made this restructuring requirement more urgent.

4. **Tied to the iron ore price.** Despite the significant weakening in freight rates (Ferrexpo's received prices have linkages to the C3 capesize rate), the share price performance remains tied to the iron ore price. Costs have been helped by the significant devaluation of the Hryvnia with little resultant inflation evident yet.

Key catalysts for the stock:

- Consolidation of the iron ore price to a point that the market believes is sustainable; the stabilization of the political issues in the Ukraine.

Valuation and risks:

Our revised Pt for the company is £1.10ps set at 1x npv in line with market performance (10.2% WACC – COE13%, COD 7.9%, gearing 40%) suggesting significant value; however; the debt burden is large with the loss of the US$174m. Downside risks include sensitivity to iron ore prices, FX and inflation and potential disruption from political unrest in the country. Additional financial risks include an inability to restructure its debt payments. Volatile inflation outcomes post the devaluation of the Hyrvnia are likely and we expect will cause earnings forecast volatility.

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Model updated:18 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Ferrexpo Plc

Reuters: FXPO.L Bloomberg: FXPO LN

Buy

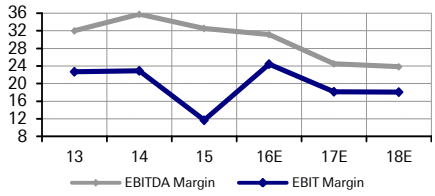
Price (17 Mar 16)	GBP 34.75
Target Price	GBP 110.00
52 Week range	GBP 14.00 - 80.00
Market Cap (m)	GBPm 203
	USDm 295

Company Profile

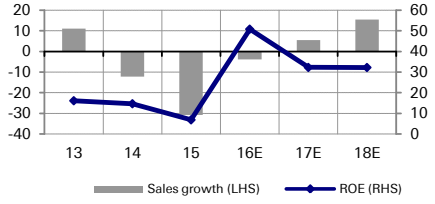
Ferrexpo is a Top 12 global pellet producer, enjoys close proximity to customers in Europe. Ferrexpo is principally involved in the production and export of iron ore pellets to Ukraine, European and Asian steel industries. The principal asset of Ferrexpo is Ferrexpo Poltava GOK Corporation which operates an open-pit iron ore mine, concentrating and pelletising operations situated in central Ukraine, on the banks of the river Dnipro.

Price Performance

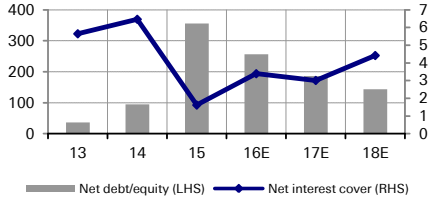
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.50	0.49	0.24	0.22	0.16	0.22
Reported EPS (USD)	0.45	0.30	0.06	0.22	0.17	0.22
DPS (USD)	0.13	0.13	0.03	0.00	0.00	0.00
BVPS (USD)	2.9	1.2	0.4	0.5	0.6	0.8
Weighted average shares (m)	585	585	585	585	585	585
Average market cap (USDm)	1,755	1,229	484	295	295	295
Enterprise value (USDm)	2,220	1,807	1,242	886	821	864
Valuation Metrics						
P/E (DB) (x)	6.0	4.3	3.5	2.3	3.1	2.3
P/E (Reported) (x)	6.7	6.9	14.6	2.2	3.0	2.3
P/BV (x)	1.08	0.68	0.76	1.08	0.87	0.63
FCF Yield (%)	nm	5.0	22.0	57.1	22.6	nm
Dividend Yield (%)	4.4	6.3	4.0	0.0	0.0	0.0
EV/Sales (x)	1.4	1.3	1.3	1.0	0.8	0.8
EV/EBITDA (x)	4.4	3.6	4.0	3.1	3.4	3.2
EV/EBIT (x)	6.2	5.7	11.0	3.9	4.6	4.2
Income Statement (USDm)						
Sales revenue	1,581	1,388	961	924	975	1,125
Gross profit	506	496	313	288	239	268
EBITDA	506	496	313	288	239	268
Depreciation	100	82	57	59	59	62
Amortisation	47	96	144	3	3	3
EBIT	359	318	112	226	177	204
Net interest income(expense)	-64	-49	-69	-67	-59	-46
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	10	-15	-18	4	4	4
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	305	254	25	164	123	162
Income tax expense	42	70	-6	31	23	31
Minorities	2	6	-2	2	1	1
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	262	178	33	131	98	130
DB adjustments (including dilution)	32	108	107	-4	-4	-4
DB Net profit	294	286	140	128	95	126
Cash Flow (USDm)						
Cash flow from operations	235	291	130	219	147	178
Net Capex	-277	-229	-23	-51	-80	-220
Free cash flow	-42	62	107	168	67	-42
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-78	-77	-78	0	0	0
Net inc/(dec) in borrowings	7	274	-394	-115	-84	-9
Other investing/financing cash flows	-93	-22	-226	0	0	0
Net cash flow	-206	236	-591	53	-17	-51
Change in working capital	*-103*	*-15*	*-77*	*29*	*-10*	*-14*
Balance Sheet (USDm)						
Cash and other liquid assets	390	627	35	89	72	21
Tangible fixed assets	1,534	926	654	554	548	706
Goodwill/intangible assets	117	60	40	29	26	26
Associates/investments	196	109	109	109	109	109
Other assets	695	413	387	356	369	387
Total assets	2,932	2,135	1,226	1,138	1,124	1,249
Interest bearing debt	1,029	1,305	904	789	705	696
Other liabilities	168	113	78	77	79	84
Total liabilities	1,197	1,417	982	865	784	780
Shareholders' equity	1,713	709	245	272	338	466
Minorities	22	8	-1	1	2	3
Total shareholders' equity	1,735	718	244	272	340	469
Net debt	*639*	*678*	*868*	*700*	*633*	*675*
Key Company Metrics						
Sales growth (%)	11.0	-12.2	-30.8	-3.8	5.5	15.4
DB EPS growth (%)	36.0	-2.8	-51.1	-8.8	-25.7	33.0
EBITDA Margin (%)	32.0	35.7	32.5	31.1	24.5	23.8
EBIT Margin (%)	22.7	22.9	11.7	24.5	18.2	18.1
Payout ratio (%)	29.5	43.3	58.5	0.0	0.0	0.0
ROE (%)	16.2	14.7	6.9	50.8	32.3	32.3
Capex/sales (%)	17.6	16.9	6.8	5.5	8.2	19.6
Capex/depreciation (x)	2.8	2.8	1.1	0.8	1.3	3.4
Net debt/equity (%)	36.8	94.5	356.0	257.0	186.5	143.9
Net interest cover (x)	5.6	6.5	1.6	3.4	3.0	4.4

Source: Company data, Deutsche Bank estimates

Fresnillo

Sell

Reuters: FRES.L Exchange: LSE Ticker: FRES

Sell into any silver pop

Price target (GBP)	790
FTSE 100 INDEX	6,190

The key themes for 2016:

- **Shares are relatively expensive:** Fresnillo shares have gained a third year to date, boosted by a combination of the gold price rally, some silver price gains, and an oil and FX tailwind for costs and cash flow. We have factored in our new higher silver price forecasts, which increase our Target Price by 5% to £7.90 per share. On these new forecasts we find Fresnillo shares expensive and believe there are better value opportunities elsewhere in our gold mining coverage.
- **A silver pop could provide a selling opportunity:** We believe Fresnillo's earnings could benefit from a silver catch-up trade. The silver price is up 8% year to date lagging the 16% rally in the gold price. Silver is not a "pure" safe haven/store of wealth compared with gold, given its industrial uses. But the prices are highly correlated and silver can periodically play catch up to gold when the ratio between the two becomes too stretched. Since the middle of February, the ratio of gold to silver has blow out to a 10 year high of 84x. The last time the ratio was that high, in October 2008, the silver price rallied 125% within 12 months, compared with a 35% increase in the gold price, bringing the gold/silver ratio back down to a more normal 60x (we set our LT ratio at 65x).

Key events:

- 1Q16 production report: 13 April 2016

Valuation and risks:

- Our price target is set at a 10% premium to our NPV valuation, in line with the other gold miners under our coverage. Our NPV is based on life-of-mine cash flows, using a long-term gold price of US$1,300/oz and a silver price of US$20/oz. The WACC of 6.4% is based on a risk-free rate of 4%, a market risk premium of 6%, a Beta of 0.4, and 0% gearing.
- A key upside risk is higher than expected silver and gold prices. A sustained weakening of the Mexican Peso is also an upside risk. The company has an excellent exploration track record and could surprise on the upside by discovering significant resources of silver and gold, leading to an upgrade in future production expectations or improving grades at the large Fresnillo mine. The company has an extensive project pipeline over the medium term - there is an upside risk to our target price if this is brought to production quicker than we forecast. On a 12 month time frame, outperformance of silver versus gold is an upside risk.

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Model updated:16 March 2016

Running the numbers

Europe

United Kingdom

Gold

Fresnillo

Reuters: FRES.L Bloomberg: FRES LN

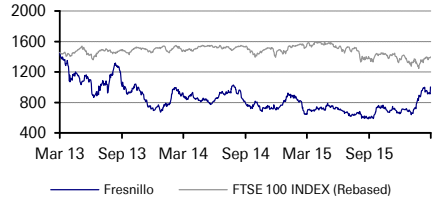
Sell

Price (17 Mar 16)	GBP 1,007.00
Target Price	GBP 790.00
52 Week range	GBP 588.00 - 1,007.00
Market Cap (m)	GBPm 7,421
	USDm 10,752

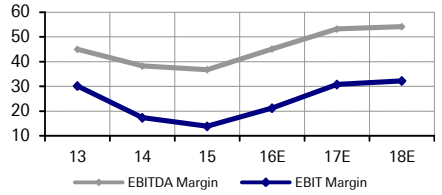
Company Profile

Fresnillo is the world's largest primary silver producer and a significant gold producer. All its operations are currently based in the highly prospective gold and silver belts of Mexico. The group currently has five operating mines, two advanced stage development and four medium-term growth projects, as well as significant land holdings in Mexico. Fresnillo's goal is to double production silver and gold by 2018, equating to 65Moz of silver and over 400koz of gold.

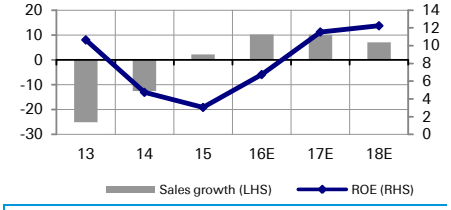
Price Performance



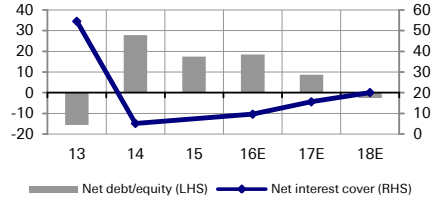
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.38	0.07	0.07	0.21	0.38	0.43
Reported EPS (USD)	0.33	0.15	0.10	0.21	0.38	0.43
DPS (USD)	0.34	0.08	0.05	0.11	0.19	0.22
BVPS (USD)	3.1	3.1	3.2	3.1	3.4	3.6
Weighted average shares (m)	737	737	737	737	737	737
Average market cap (USDm)	13,455	10,122	8,059	10,752	10,752	10,752
Enterprise value (USDm)	13,002	10,312	8,048	10,788	10,612	10,357
Valuation Metrics						
P/E (DB) (x)	48.4	187.1	157.6	68.6	38.8	33.8
P/E (Reported) (x)	56.0	93.7	114.3	68.6	38.8	33.8
P/BV (x)	3.99	3.87	3.30	4.68	4.29	4.00
FCF Yield (%)	nm	nm	0.9	0.4	2.9	4.0
Dividend Yield (%)	1.9	0.6	0.5	0.7	1.3	1.5
EV/Sales (x)	8.0	7.3	5.6	6.8	6.1	5.5
EV/EBITDA (x)	17.9	19.0	15.1	15.0	11.4	10.2
EV/EBIT (x)	26.7	42.1	40.2	31.9	19.6	17.1
Income Statement (USDm)						
Sales revenue	1,615	1,413	1,444	1,593	1,754	1,877
Gross profit	1,000	803	751	901	1,112	1,197
EBITDA	727	541	532	719	934	1,017
Depreciation	239	296	331	381	393	412
Amortisation	0	0	0	0	0	0
EBIT	488	245	200	338	540	605
Net interest income(expense)	-9	-47	20	-35	-35	-30
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-54	77	28	0	0	0
Other pre-tax income/(expense)	-6	-24	-36	-62	-79	-86
Profit before tax	418	251	212	241	427	489
Income tax expense	158	134	143	84	149	171
Minorities	21	9	-1	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	240	108	71	157	277	318
DB adjustments (including dilution)	38	-54	-19	0	0	0
DB Net profit	278	54	51	157	277	318
Cash Flow (USDm)						
Cash flow from operations	446	122	543	606	694	752
Net Capex	-560	-411	-469	-566	-385	-322
Free cash flow	-114	-289	74	40	309	430
Equity raised/(bought back)	346	-451	0	0	0	0
Dividends paid	-505	-88	-38	-51	-98	-145
Net inc/(dec) in borrowings	830	0	0	0	0	0
Other investing/financing cash flows	81	-270	190	-3	-1	7
Net cash flow	638	-1,098	227	-14	210	291
Change in working capital	*0*	*0*	*0*	*0*	*0*	*0*
Balance Sheet (USDm)						
Cash and other liquid assets	1,252	154	381	367	577	868
Tangible fixed assets	1,838	1,969	2,139	2,324	2,315	2,225
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	436	478	456	425	391	354
Other assets	558	1,140	881	691	729	745
Total assets	4,084	3,742	3,858	3,807	4,012	4,192
Interest bearing debt	836	796	797	797	797	797
Other liabilities	576	644	686	683	677	680
Total liabilities	1,412	1,440	1,483	1,480	1,474	1,477
Shareholders' equity	2,273	2,275	2,344	2,297	2,508	2,685
Minorities	399	27	30	30	30	30
Total shareholders' equity	2,672	2,302	2,374	2,327	2,538	2,716
Net debt	*-415*	*642*	*416*	*430*	*220*	*-71*
Key Company Metrics						
Sales growth (%)	-25.1	-12.5	2.2	10.3	10.1	7.0
DB EPS growth (%)	-58.5	-80.5	-5.5	206.5	77.0	14.7
EBITDA Margin (%)	45.0	38.3	36.8	45.1	53.2	54.2
EBIT Margin (%)	30.2	17.3	13.9	21.2	30.8	32.2
Payout ratio (%)	104.6	54.6	56.9	50.0	50.0	50.0
ROE (%)	10.7	4.8	3.1	6.8	11.5	12.3
Capex/sales (%)	35.4	30.1	32.9	35.5	22.0	17.1
Capex/depreciation (x)	2.4	1.4	1.4	1.5	1.0	0.8
Net debt/equity (%)	-15.5	27.9	17.5	18.5	8.7	-2.6
Net interest cover (x)	54.5	5.2	nm	9.7	15.6	20.1

Source: Company data, Deutsche Bank estimates

Glencore

Hold

Reuters: GLEN.L Exchange: LSE Ticker: GLEN

Recovered from the debt misunderstanding – now for the longer term strategy

Price target (GBP)	160
FTSE 100 INDEX	6,190

Our investment case:

1. **Mover advantage.** In our view, one of Glencore's key differentiators is its ability to move. While its commodity performance outlook and M&A capability have come under question with the collapse in the commodity prices and ongoing writedowns, its ability to recognize the need for action and quickly execute rather than get bogged down in analysis is a clear strength for the company. This has led to the successful correction of its balance sheet position.

2. **More debt improvement to come** The recent result showed more debt improvement momentum: 1) net debt target for end 2016 now US$17-18bn (from US$18-19bn) driven by a further US$300m capex cut to US$3.5bn and US$400m of opex savings. 2) Marketing EBIT guidance for 2016 up at US$2.4- 2.7bn; 3) An additional US$4-5bn is expected from asset sales this year. 4) free cash flow is >U$3bn at spot prices. 5) accounts payable dropped by US$4bn removing the criticism that cash was funded by accounts payable.

3. **Now for the future.** A deliverable for the company now is to articulate its longer term strategy (which has historically been to simply be opportunistic). While there are a few known growth projects, it will need to be more specific about it plans, for example its consolidation plans in Agriculture.

Key catalysts for the stock – Short and long

- Ongoing asset sales will continue to reflate the balance sheet and could potentially move the stock higher
- Articulating an earnings growth strategy.

Changes made:

The recent run in the share price has now countered the mispricing that we believed to be in there based on misunderstanding of the trade finance part of the business and we downgrade our recommendation to Hold.

Valuation and risks:

Our price target is set at 0.8x our DCF-derived NPV (WACC 8.6%, CoD 4%, Gearing 20%, Tax 20%, RfR 3.0%) in line with its relative sector performance. Risks include variations in commodity prices away from expectations (particularly copper and zinc) or stronger operating currency (particularly the AUD). Glencore still needs to rebuild its relationship and trust with equity investors. However the rapid debt reduction plans have removed the balance sheet and trading fears that had overly impacted the share price.

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Model updated:21 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Glencore

Reuters: GLEN.L Bloomberg: GLEN LN

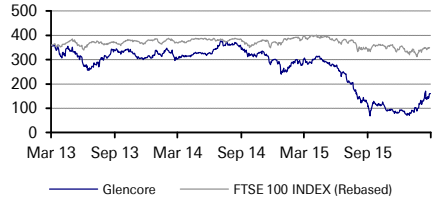
Hold

Price (21 Mar 16)	GBP 159.90
Target Price	GBP 160.00
52 Week range	GBP 68.62 - 314.90
Market Cap (m)	GBPm 22,738
	USDm 33,006

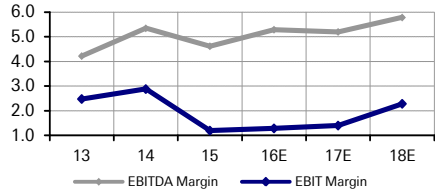
Company Profile

Glencore is one of the world's leading integrated producers and marketers of commodities, covering metals and minerals, energy and agricultural commodities. The company has worldwide activities in production, sourcing, processing, refining, transporting, storage and financing of commodities. The recent merger with Xstrata has significantly increased its mining output and moved it from a trading dominated to mining dominated company.

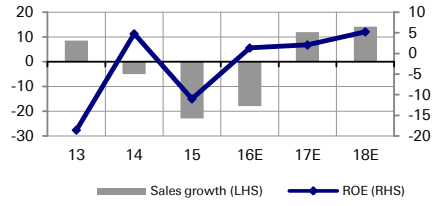
Price Performance



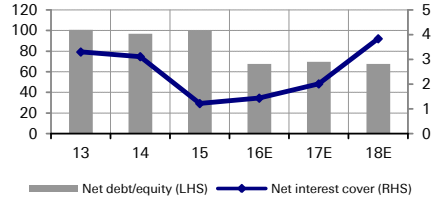
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.32	0.33	0.10	0.04	0.07	0.17
Reported EPS (USD)	-0.65	0.18	-0.37	0.04	0.07	0.17
DPS (USD)	0.17	0.18	0.06	0.12	0.19	0.19
BVPS (USD)	3.7	3.7	2.8	3.2	3.1	3.1
Weighted average shares (m)	11,141	13,099	13,318	14,220	14,220	14,220
Average market cap (USDm)	57,866	71,207	42,805	33,006	33,006	33,006
Enterprise value (USDm)	92,485	107,112	69,855	51,169	51,108	49,935
Valuation Metrics						
P/E (DB) (x)	16.1	16.7	31.2	56.6	34.8	14.0
P/E (Reported) (x)	nm	31.0	nm	56.6	34.8	14.0
P/BV (x)	1.41	1.28	0.47	0.72	0.74	0.75
FCF Yield (%)	nm	nm	17.8	11.8	7.5	11.2
Dividend Yield (%)	3.2	3.3	1.9	5.2	8.0	8.3
EV/Sales (x)	0.4	0.5	0.4	0.4	0.3	0.3
EV/EBITDA (x)	9.4	9.1	8.9	6.9	6.3	4.8
EV/EBIT (x)	16.0	16.8	34.1	28.4	23.3	12.2
Income Statement (USDm)						
Sales revenue	232,694	221,073	170,497	139,876	156,553	178,596
Gross profit	9,825	11,825	7,881	7,403	8,146	10,335
EBITDA	9,825	11,825	7,881	7,403	8,146	10,335
Depreciation	4,049	5,448	5,835	5,599	5,948	6,249
Amortisation	0	0	0	0	0	0
EBIT	5,776	6,377	2,046	1,804	2,198	4,086
Net interest income(expense)	-1,751	-2,050	-1,680	-1,256	-1,093	-1,066
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-11,068	-74	-7,355	0	0	0
Other pre-tax income/(expense)	-1	0	-994	0	0	0
Profit before tax	-7,044	4,253	-7,983	547	1,105	3,020
Income tax expense	254	1,809	98	-210	-87	372
Minorities	104	136	-3,150	172	242	278
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-7,402	2,308	-4,931	585	950	2,370
DB adjustments (including dilution)	11,068	1,977	6,306	0	0	0
DB Net profit	3,666	4,285	1,375	585	950	2,370
Cash Flow (USDm)						
Cash flow from operations	9,184	8,136	13,030	7,153	5,936	7,088
Net Capex	-9,329	-8,854	-5,404	-3,258	-3,462	-3,396
Free cash flow	-145	-718	7,626	3,895	2,473	3,692
Equity raised/(bought back)	10	-767	1,643	0	0	0
Dividends paid	-2,062	-2,244	-2,328	0	-2,656	-2,749
Net inc/(dec) in borrowings	558	-559	-6,660	-4,267	-4,952	-3,374
Other investing/financing cash flows	1,706	4,263	-398	4,992	243	231
Net cash flow	67	-25	-117	4,620	-4,891	-2,200
Change in working capital	*2,599*	*-703*	*7,525*	*1,136*	*-1,008*	*-1,421*
Balance Sheet (USDm)						
Cash and other liquid assets	2,849	2,824	2,707	7,327	2,435	235
Tangible fixed assets	67,233	70,110	61,278	58,937	56,452	53,598
Goodwill/intangible assets	9,158	8,866	7,516	7,516	7,516	7,516
Associates/investments	21,073	16,902	14,381	13,731	13,731	13,731
Other assets	53,799	53,503	42,603	37,749	40,773	45,037
Total assets	154,112	152,205	128,485	125,259	120,907	120,117
Interest bearing debt	55,173	52,693	44,049	39,132	34,180	30,806
Other liabilities	47,008	48,032	43,093	39,165	41,181	44,024
Total liabilities	102,181	100,725	87,142	78,297	75,361	74,830
Shareholders' equity	48,563	48,542	41,254	46,873	45,457	45,198
Minorities	3,368	2,938	89	89	89	89
Total shareholders' equity	51,931	51,480	41,343	46,962	45,546	45,287
Net debt	*52,324*	*49,869*	*41,342*	*31,805*	*31,745*	*30,571*
Key Company Metrics						
Sales growth (%)	8.5	-5.0	-22.9	-18.0	11.9	14.1
DB EPS growth (%)	345.9	0.9	-68.4	-60.2	62.6	149.4
EBITDA Margin (%)	4.2	5.3	4.6	5.3	5.2	5.8
EBIT Margin (%)	2.5	2.9	1.2	1.3	1.4	2.3
Payout ratio (%)	nm	102.2	nm	291.9	278.8	115.7
ROE (%)	-18.5	4.8	-11.0	1.3	2.1	5.2
Capex/sales (%)	4.1	4.1	3.2	2.3	2.2	1.9
Capex/depreciation (x)	2.4	1.7	0.9	0.6	0.6	0.5
Net debt/equity (%)	100.8	96.9	100.0	67.7	69.7	67.5
Net interest cover (x)	3.3	3.1	1.2	1.4	2.0	3.8

Source: Company data, Deutsche Bank estimates

Kaz Minerals

Hold

Reuters: KAZ.L Exchange: LSE Ticker: KAZ

Ramping up in 2016

Price target (GBP)	170
FTSE 100 INDEX	6,190

Our investment case:

1. **Transformation underway and on the verge of delivery.** Kazakhmys is undertaking its plan to convert from a high cost copper producer to a low cost copper producer post the commissioning of its two Greenfield projects, Bozshakol and Aktogay. The new production guidance provided with the recent full year result is 130-155kt of copper production in 2016 – this is nearly double the 81kt produced in 2015 and reflects the ramp-up of both Aktogay and Bozshakol. We had been skeptical of the ability to hit production targets given what appears to us last year to be a delayed capital spend plan, but it appears that our skepticism was unwarranted and both production and costs of the new projects are performing well. Partially offsetting this will be lower zinc and silver production levels as the older East region mines proceed through lower grade regions (copper production in the East region will be down 10kt as well).
2. **Kaz relationship with China is paying off at Aktogay however the debt burden is large.** The debt burden on the company remains large (US$2.3b at year end) and it needs to convert its new production into EBITDA as soon as possible. This should be manageable with the net cash cost of Bozshakol and Aktogay expected to be US80c/lb and US110c/lb respectively placing them in the bottom quartile of the global cost curve. Kaz Minerals announced in November 2015 that it has agreed to defer US$300m of payment on the Aktogay project from 2016 and 2017 into 2018. The agreement was struck with its principle contractor, Non Ferrous China (NFC). The US$300m deferral will provide some much needed breathing space. Importantly, it is a clear indication of China's desire/interest in getting the copper projects delivered.
3. **However there is a lot now in the price.** With our change in the long run copper price, we have lowered our Price target to £1.7ps. This combined with the recent run up in the share price brings it to fair value and we have lowered our recommendation to Hold.

Key catalysts for the stock:

- Demonstrated successful delivery of the two growth projects will be key milestones for the company and the market is likely to start reacting to these when they near completion and all capital commitments have been made.
- Kaz Minerals is currently the archetypal leveraged copper play and as such will be highly influenced by the moves in the copper price in Tenge.

Valuation and risks:

Our PT is set at 0.77x times our NPV in line with its relative performance in the sector. We use life of mine cash flow analysis to arrive at our DCF valuation (WACC 10.6%: CoE 11.8% & CoD 6.5%, tax rate of 20%). Key risks include different copper and zinc prices to our forecasts, lower production of copper and zinc and a varied local operating currency (Tenge). Other risks include project delivery (both positive and negative), corporate governance, domestic economic and political developments and acquisitions. While it is moving through the development of its two large projects, its gearing will increase substantially and pose an extra risk in the event of commodity price declines.

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Model updated:18 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

KAZ Minerals

Reuters: KAZ.L Bloomberg: KAZ LN

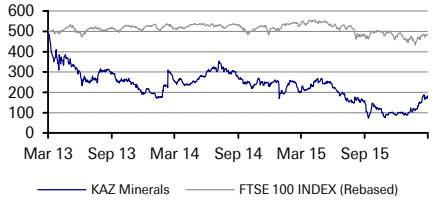
Hold

Price (17 Mar 16)	GBP 183.00
Target Price	GBP 170.00
52 Week range	GBP 72.70 - 269.90
Market Cap (m)	GBPm 818
	USDm 1,185

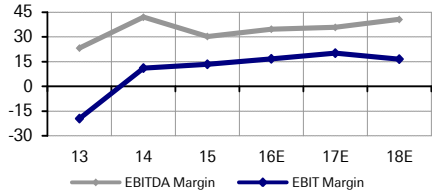
Company Profile

Kazakhmys is a Top 10 global copper producer, Top 5 in silver, an expanding zinc producer, enjoys bottom quartile costs, has expansion and acquisition potential and close proximity to key end-consumer, China. Kazakhmys listed in London recently and entered the FTSE 100 index. Its assets are all located in Kazakstan.

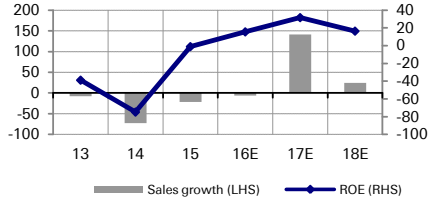
Price Performance



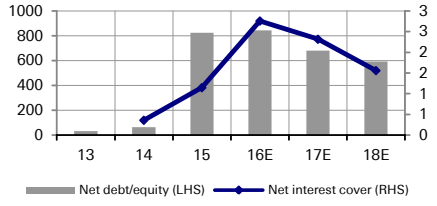
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.37	0.19	-0.02	0.12	0.32	0.20
Reported EPS (USD)	-3.96	-5.28	-0.03	0.12	0.32	0.20
DPS (USD)	0.00	0.00	0.00	0.00	0.03	0.02
BVPS (USD)	9.4	4.7	0.7	0.9	1.2	1.3
Weighted average shares (m)	513	447	447	447	447	447
Average market cap (USDm)	3,050	1,919	1,244	1,185	1,185	1,185
Enterprise value (USDm)	2,296	2,013	2,785	3,338	3,594	3,638
Valuation Metrics						
P/E (DB) (x)	16.1	22.1	nm	21.6	8.3	12.9
P/E (Reported) (x)	nm	nm	nm	21.6	8.3	12.9
P/BV (x)	0.38	0.86	2.12	3.09	2.30	1.98
FCF Yield (%)	nm	nm	nm	nm	nm	nm
Dividend Yield (%)	0.0	0.0	0.0	0.0	1.0	0.6
EV/Sales (x)	0.7	2.4	4.2	5.4	2.4	1.9
EV/EBITDA (x)	3.2	5.7	13.8	15.4	6.6	4.8
EV/EBIT (x)	nm	21.2	31.0	31.8	11.8	11.7
Income Statement (USDm)						
Sales revenue	3,099	847	666	624	1,507	1,873
Gross profit	722	356	202	217	541	761
EBITDA	722	356	202	217	541	761
Depreciation	288	43	52	55	116	317
Amortisation	1,036	218	60	57	119	133
EBIT	-602	95	90	105	305	311
Net interest income(expense)	-79	-263	-78	-38	-132	-200
Associates/affiliates	-1,224	-2,128	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	-681	-168	12	67	174	112
Income tax expense	127	65	24	12	31	20
Minorities	0	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-2,032	-2,361	-12	55	142	92
DB adjustments (including dilution)	2,222	2,448	2	0	0	0
DB Net profit	190	87	-10	55	142	92
Cash Flow (USDm)						
Cash flow from operations	293	214	-175	104	364	411
Net Capex	-1,271	-1,209	-1,030	-716	-614	-445
Free cash flow	-978	-995	-1,205	-612	-250	-35
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-42	0	0	0	-6	-9
Net inc/(dec) in borrowings	683	-26	409	-12	188	38
Other investing/financing cash flows	802	1,036	-83	0	0	0
Net cash flow	465	15	-879	-624	-68	-6
Change in working capital	*-13*	*21*	*-62*	*-4*	*96*	*7*
Balance Sheet (USDm)						
Cash and other liquid assets	1,715	1,730	851	227	158	152
Tangible fixed assets	3,312	2,740	2,393	3,054	3,552	3,680
Goodwill/intangible assets	52	11	7	7	7	7
Associates/investments	1,293	871	715	715	715	715
Other assets	2,247	366	192	262	771	810
Total assets	8,619	5,718	4,158	4,265	5,204	5,365
Interest bearing debt	3,111	3,092	3,504	3,492	3,679	3,717
Other liabilities	1,287	522	332	386	1,007	1,046
Total liabilities	4,398	3,614	3,836	3,878	4,686	4,763
Shareholders' equity	4,217	2,101	319	384	515	599
Minorities	4	3	3	3	3	3
Total shareholders' equity	4,221	2,104	322	387	518	602
Net debt	*1,396*	*1,362*	*2,653*	*3,265*	*3,521*	*3,565*
Key Company Metrics						
Sales growth (%)	-7.6	-72.7	-21.4	-6.3	141.6	24.2
DB EPS growth (%)	-60.5	-47.4	na	na	159.4	-35.6
EBITDA Margin (%)	23.3	42.0	30.4	34.8	35.9	40.7
EBIT Margin (%)	-19.4	11.2	13.5	16.8	20.3	16.6
Payout ratio (%)	nm	nm	nm	0.0	8.0	8.0
ROE (%)	-38.8	-74.7	-1.0	15.6	31.7	16.4
Capex/sales (%)	41.0	142.8	154.8	114.8	40.8	23.8
Capex/depreciation (x)	4.4	28.1	19.8	13.0	5.3	1.4
Net debt/equity (%)	33.1	64.7	823.9	843.8	679.9	592.0
Net interest cover (x)	nm	0.4	1.1	2.8	2.3	1.6

Source: Company data, Deutsche Bank estimates

Lonmin Plc

Sell

Reuters: LMI.L Exchange: LSE Ticker: LMI

Leaking cash with no price recovery

Price target (GBP)	45
FTSE 100 INDEX	6,190

Key themes for 2016:

- As a marginal producer, our price forecasts (based on marginal costs) leave Lonmin leaking cash slowly but steadily over time. Lonmin's position as the marginal producer with a single mine complex also leaves the group's balance sheet vulnerable to both operational risks (strikes, safety stoppages, operational failures) as well as to prices declining further. We believe higher-than-forecast prices (i.e. above marginal cost) are unlikely in the medium-term given the well-supplied PGM metals market; and alternative sources of metal for end-users from recycling and above-ground stocks.
- Lonmin has performed operationally, assisted by its high ore reserve availability, and has no further obvious levers to pull in our view. Management has already made the tough decision to lower production: output from the Marikana complex will reduce by 100koz to 650kozpa over FY16 and FY17 as the Hossy and Newman Shafts are closed and some of the smaller, contractor-operated mines are put onto care-and-maintenance.
- We see a concentration of downside risks to being exposed to the high-cost producer in an industry under pressure, and with low-prices expected to persist for the medium-term we have a Sell recommendation.

Key events:

- Interim results including 2Q16 production report: 16 May 2016

Valuation and risks:

- Our price target is derived by applying a 0.9x multiple to the group's DCF valuation. The 10% discount is based on company management performance, relative to the broader Metals and Mining peer group (based on life-of-mine cash flows discounted at a WACC of 10.0%, Beta 1.4, ERP 6%).Risks include a weaker-than-expected rand and/or higher-than-expected PGM prices leading to stronger than forecast cash flow, taking pressure off the balance sheet. Additional risks include corporate action or an approach for Lonmin given its distressed position; better-than-expected production as a result of unexpected improvements in productivity; grades; recoveries or a combination of the above.

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Model updated:16 March 2016

Running the numbers

Sub-Saharan Africa

South Africa

Platinum

Lonmin Plc

Reuters: LMI.L Bloomberg: LMI LN

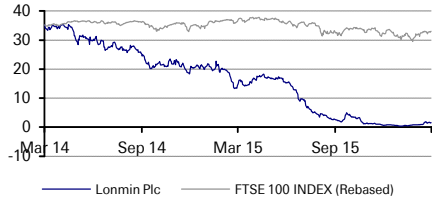
Sell

Price (17 Mar 16)	GBP 156.50
Target Price	GBP 45.00
52 Week range	GBP 36.75 - 1,820.44
Market Cap (m)	GBPm 923
	USDm 1,337

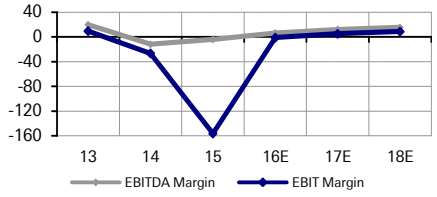
Company Profile

Lonmin specialises in the mining of PGMs (platinum group metals). The group operates a number of platinum mines, concentrators, smelters and a refinery in its core Marikana operations, all situated in the Bushveld Igneous Complex of South Africa. The company's target is to produce 700koz in FY16, and 650kozpa in the two years thereafter.

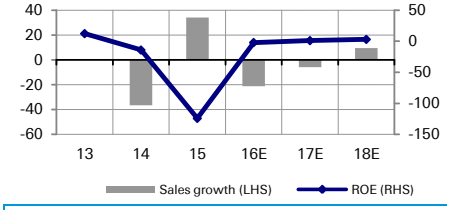
Price Performance



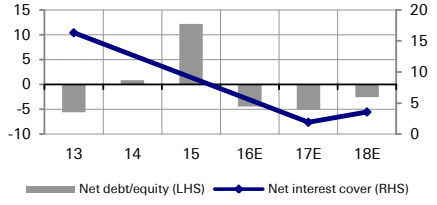
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 30-Sep	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	0.20	0.05	-0.16	-0.03	0.05	0.15
Reported EPS (USD)	0.31	-0.33	-2.86	-0.05	0.05	0.15
DPS (USD)	0.00	0.00	0.00	0.00	0.00	0.00
BVPS (USD)	6.4	5.7	2.8	3.3	6.9	7.1
Weighted average shares (m)	532	570	582	590	282	282
Average market cap (USDm)	30,197	31,510	13,854	1,337	1,337	1,337
Enterprise value (USDm)	29,731	31,296	13,783	977	950	981
Valuation Metrics						
P/E (DB) (x)	278.1	nm	nm	nm	42.3	15.3
P/E (Reported) (x)	182.6	nm	nm	nm	42.3	15.3
P/BV (x)	9.73	6.40	1.06	0.69	0.33	0.32
FCF Yield (%)	nm	nm	nm	nm	4.7	nm
Dividend Yield (%)	0.0	0.0	0.0	0.0	0.0	0.0
EV/Sales (x)	19.6	32.4	10.7	1.0	1.0	0.9
EV/EBITDA (x)	97.8	nm	nm	14.6	8.0	6.0
EV/EBIT (x)	202.2	nm	nm	nm	18.9	10.6
Income Statement (USDm)						
Sales revenue	1,520	965	1,293	1,019	960	1,052
Gross profit	304	-113	-52	67	118	164
EBITDA	304	-113	-52	67	118	164
Depreciation	157	142	1,966	77	68	71
Amortisation	0	0	0	0	0	0
EBIT	147	-255	-2,018	-10	50	93
Net interest income(expense)	-9	-64	-239	-34	-26	-26
Associates/affiliates	4	-6	-5	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	-2	-1	0	0	0	0
Profit before tax	140	-326	-2,262	-44	24	67
Income tax expense	-58	-123	-363	-12	7	19
Minorities	32	-15	-238	-4	2	6
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	166	-188	-1,661	-28	15	42
DB adjustments (including dilution)	-57	219	1,567	13	0	0
DB Net profit	109	31	-94	-15	15	42
Cash Flow (USDm)						
Cash flow from operations	16	-116	-12	-2	97	111
Net Capex	-159	-93	-136	-82	-67	-136
Free cash flow	-143	-209	-148	-84	30	-25
Equity raised/(bought back)	824	1	3	407	0	0
Dividends paid	-11	-37	-19	-19	-19	-19
Net inc/(dec) in borrowings	-742	175	331	-135	0	0
Other investing/financing cash flows	-42	12	10	-38	0	0
Net cash flow	-114	-58	177	131	11	-44
Change in working capital	*-223*	*32*	*60*	*13*	*11*	*-8*
Balance Sheet (USDm)						
Cash and other liquid assets	201	143	320	451	462	417
Tangible fixed assets	2,908	2,882	1,477	1,482	1,480	1,546
Goodwill/intangible assets	502	497	94	94	94	94
Associates/investments	466	392	147	147	147	147
Other assets	539	451	391	298	274	288
Total assets	4,616	4,365	2,429	2,472	2,457	2,492
Interest bearing debt	0	172	505	370	370	370
Other liabilities	1,006	811	404	285	272	278
Total liabilities	1,006	983	909	655	642	648
Shareholders' equity	3,409	3,233	1,629	1,942	1,954	1,996
Minorities	201	149	-109	-132	-149	-162
Total shareholders' equity	3,610	3,382	1,520	1,810	1,805	1,834
Net debt	*-201*	*29*	*185*	*-81*	*-92*	*-47*
Key Company Metrics						
Sales growth (%)	nm	-36.5	34.0	-21.2	-5.8	9.5
DB EPS growth (%)	na	-73.6	na	84.5	na	177.2
EBITDA Margin (%)	20.0	-11.7	-4.0	6.6	12.3	15.6
EBIT Margin (%)	9.7	-26.4	-156.1	-1.0	5.2	8.8
Payout ratio (%)	0.0	nm	nm	nm	0.0	0.0
ROE (%)	12.4	-14.1	-124.0	-2.1	1.1	3.0
Capex/sales (%)	10.5	9.6	10.5	8.1	7.0	13.0
Capex/depreciation (x)	1.0	0.7	0.1	1.1	1.0	1.9
Net debt/equity (%)	-5.6	0.9	12.2	-4.4	-5.1	-2.6
Net interest cover (x)	16.3	nm	nm	nm	1.9	3.6

Source: Company data, Deutsche Bank estimates

Nordgold

Buy

Reuters: NORDNq.L Exchange: LSE Ticker: NORD

Improving FCF

Price target (USD)	3.70
FTSE 100 INDEX	6,190

Key themes for 2016:

- We expect Nordgold to benefit from our forecast stronger gold price, fx tailwinds and cost efficiencies. We forecast AISC to stay around the US$900/oz level and EBITDA margins to remain high in the low to mid 40s%. FCF is rapidly improving on our numbers as capex peaks in 2016 on the group's growth projects Bouly and Gross. In addition, valuation on an NPV basis is compelling at 0.5x.
- Nordgold shares are difficult to trade due to the low free float (8%) and continued share buyback programme (although that does signal management's view of its shares as undervalued). We remain hopeful that the relocation of Nordgold's jurisdiction from the Netherlands to the UK, which is now underway, precedes the company's planned issuance of shares to secure a premium listing on the LSE which requires a 25% minimum freefloat. This a key potential positive catalyst for the shares on a 12 month basis.

Key events:

- 1Q16 operating results: mid-April
- Investor Day: mid-April

Valuation and risks:

- We value Nordgold using a sum-of-the-parts of life of mine DCF models. We apply an NPV multiple of 0.7x to reflect the ranking we assign to Nordgold within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow. We value the group's longer-dated growth options at US$134m or US$0.36/GDR. We use a WACC of 8.36% and a long-term (real) gold price of US$1,300/oz.
- Key downside risks include lower-than-expected gold prices, higher-than-expected costs and a stronger-than-expected Rouble, Tenge, Guinean franc and West African franc. Operational risks are concentrated around management's ability to deliver on development projects and to sustain cost reduction programs. Further risks include changes in fiscal regime and/or mining legislations. The planned seeking of a premium listing in London requires a minimum freefloat of 25% - Nordgold has indicated it may issue some new shares to meet this requirement thus there is a risk of dilution to existing shareholders

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Model updated:18 March 2016

Running the numbers

Emerging Europe

Russia

Metals & Mining

Nordgold

Reuters: NORDNq.L Bloomberg: NORD LI

Buy

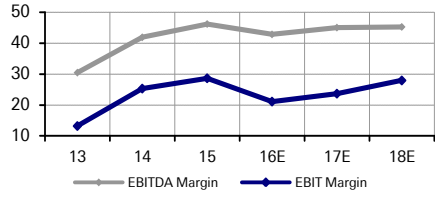
Price (17 Mar 16)	USD 2.90
Target Price	USD 3.70
52 Week range	USD 2.50 - 3.20
Market Cap (m)	EURm 964
	USDm 1,091

Company Profile

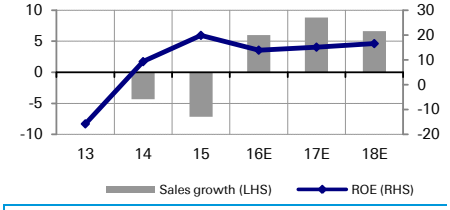
Nordgold is a gold mining and exploration company with eight operating mines in Russia, Kazakhstan, Burkina Faso and Guinea. The company is a former subsidiary of Severstal Group, spun off in January 2012, when a portion of Nordgold's share capital was listed in the form of Global Depositary Receipts.

Price Performance

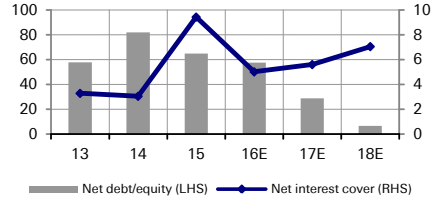
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	-0.55	0.26	0.47	0.32	0.39	0.52
Reported EPS (USD)	-0.58	0.26	0.47	0.32	0.39	0.52
DPS (USD)	0.08	0.10	0.16	0.11	0.13	0.17
BVPS (USD)	3.1	2.5	2.2	2.3	2.8	3.4
Weighted average shares (m)	378	378	376	376	376	376
Average market cap (USDm)	973	602	1,015	1,091	1,091	1,091
Enterprise value (USDm)	1,756	1,238	1,609	1,680	1,488	1,274
Valuation Metrics						
P/E (DB) (x)	nm	6.2	5.8	9.2	7.4	5.6
P/E (Reported) (x)	nm	6.1	5.8	9.2	7.4	5.6
P/BV (x)	0.52	0.60	1.23	1.24	1.02	0.86
FCF Yield (%)	15.2	35.3	18.8	8.4	23.7	27.3
Dividend Yield (%)	3.1	6.5	5.8	3.7	4.5	6.0
EV/Sales (x)	1.4	1.0	1.4	1.4	1.1	0.9
EV/EBITDA (x)	4.5	2.4	3.1	3.3	2.5	2.0
EV/EBIT (x)	10.4	4.0	5.0	6.6	4.8	3.3
Income Statement (USDm)						
Sales revenue	1,271	1,216	1,129	1,197	1,302	1,389
Gross profit	461	572	578	631	705	755
EBITDA	388	510	522	513	587	629
Depreciation	219	202	198	260	278	241
Amortisation	0	0	0	0	0	0
EBIT	168	308	324	253	309	388
Net interest income(expense)	-51	-101	-34	-50	-55	-55
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-386	-24	-15	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	-269	183	274	203	254	333
Income tax expense	-70	60	86	62	79	104
Minorities	19	25	13	21	27	35
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-218	98	176	119	148	195
DB adjustments (including dilution)	9	-1	0	0	0	0
DB Net profit	-209	97	176	119	148	195
Cash Flow (USDm)						
Cash flow from operations	310	328	418	332	446	466
Net Capex	-162	-115	-227	-241	-188	-169
Free cash flow	148	213	191	91	258	298
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-71	-40	-59	-80	-40	-49
Net inc/(dec) in borrowings	232	-21	-2	-7	66	0
Other investing/financing cash flows	-110	-268	24	-6	0	0
Net cash flow	199	-115	154	-2	284	248
Change in working capital	*-199*	*116*	*-154*	*-13*	*-284*	*-248*
Balance Sheet (USDm)						
Cash and other liquid assets	244	128	364	377	661	910
Tangible fixed assets	816	669	668	684	684	684
Goodwill/intangible assets	906	708	683	683	683	683
Associates/investments	20	240	60	66	66	66
Other assets	646	498	352	373	389	392
Total assets	2,632	2,242	2,126	2,183	2,483	2,735
Interest bearing debt	968	944	946	939	1,005	1,005
Other liabilities	413	300	282	269	287	302
Total liabilities	1,381	1,245	1,228	1,208	1,292	1,307
Shareholders' equity	1,172	939	827	882	1,072	1,273
Minorities	78	59	71	93	119	154
Total shareholders' equity	1,251	998	898	975	1,191	1,427
Net debt	*724*	*817*	*582*	*562*	*344*	*95*
Key Company Metrics						
Sales growth (%)	nm	-4.3	-7.1	6.0	8.8	6.6
DB EPS growth (%)	na	na	81.1	-32.2	24.2	31.5
EBITDA Margin (%)	30.5	41.9	46.2	42.9	45.1	45.3
EBIT Margin (%)	13.2	25.3	28.7	21.1	23.7	28.0
Payout ratio (%)	nm	39.6	33.4	33.4	33.4	33.4
ROE (%)	-15.7	9.3	19.9	13.9	15.1	16.6
Capex/sales (%)	12.8	9.5	20.1	20.1	14.5	12.1
Capex/depreciation (x)	0.7	0.6	1.1	0.9	0.7	0.7
Net debt/equity (%)	57.9	81.9	64.8	57.7	28.9	6.7
Net interest cover (x)	3.3	3.1	9.4	5.0	5.6	7.1

Source: Company data, Deutsche Bank estimates

Norsk Hydro

Hold

Reuters: NHY.OL Exchange: OSL Ticker: NHY

A counter-cyclical player

Price target (NOK)	33
Oslo All Share Index	640

Our investment case:

1) Well managed operations. Norsk Hydro is a well-managed integrated aluminium producer. It benefits from its low cost Hydro power in Norway and is now benefitting from its upstream bauxite and alumina operations in Brazil with the cost cutting coming through. The group will have additional benefits this year when its onerous legacy contracts roll off.

2) No net debt: Possibly one of the biggest attractions to the stock is that it has no net debt. The recent cash windfall delivered by ramping regional premiums and a weakening NOK has meant that the company is now carrying no net debt into the current volatile pricing and market backdrop.

3) More growth than expected and still paying a dividend. Most mining companies are cutting capex, Hydro is growing its capex significantly. Capex is guided to grow to NOK8.6 in 2016 and 6.7 in 2017. Hydro expects aluminium to continue to replace steel and copper in cars and is investing in Body-in-White plants in Europe and also in can recycling. It has approved the NOK4.3b Karmøy technology pilot plant (of which NOK1.6b will come from Enova) – this will lift production by 75ktpa ramping up from 2H17, but the key benefit will be the development/proof of technology that can be retrofit to the smelter fleet.

4) But a lot is priced in. While We like the direction that the management team is following, the current share price is already factoring in a lot of the upside and we have a Hold recomendation.

Key catalysts for the stock:

- Weakening fx – the weaker NOK has been a catalyst, however a bigger near term catalyst could be the weakening of the BRL, which has stabalised but could weaken further with a Fed rate hike.
- Continuing pressure on the aluminium price and alumina price will weigh on the stock performance.

Valuation and risks:

Our PT is set at 0.93x our NPV valuation for the company in line with its sector performance – WACC 10.0%, CoE 12.4%, CoD 6.5%). Our target price is in line with our valuation. Risks to valuation and price target include significant movements in our aluminium price, exchange rate and cost assumptions. The key area of risk is NHY's ability or otherwise to negotiate the removal of the ICMS fuel charge.

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Model updated:18 March 2016

Running the numbers

Europe

Norway

Metals & Mining

Norsk Hydro

Reuters: NHY.OL Bloomberg: NHY NO

Hold

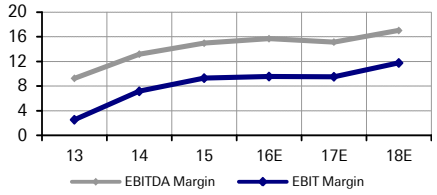
Price (17 Mar 16)	NOK 34.33
Target Price	NOK 33.00
52 Week range	NOK 26.00 - 44.39
Market Cap (m)	NOKm 70,115
	USDm 8,400

Company Profile

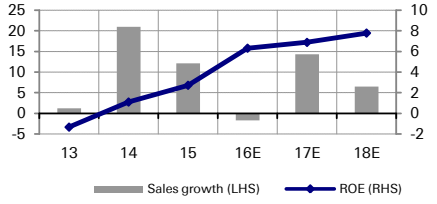
Hydro is a fully integrated aluminium producer with power generating, alumina refining, aluminum smelting and aluminium processing operations. Its recent acquisition of the Brazilian aluminium, alumina and bauxite assets from Vale has shifted its balance from naturally short alumina (neutral when including long-term offtake agreements) to naturally long. With the transfer of the assets only just complete, the company is in the process of integrating them into its business. Once done, the bauxite and alumina assets offer significant growth options to Hydro. The company is in the process of commissioning its major greenfield smelter in Qatar.

Price Performance

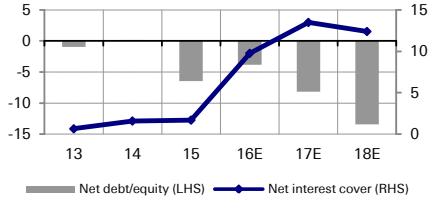
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (NOK)	0.93	1.83	3.29	1.77	2.41	5.13
Reported EPS (NOK)	-0.45	0.39	0.99	2.41	2.92	3.70
DPS (NOK)	0.75	1.00	1.00	0.75	0.96	2.05
BVPS (NOK)	34.3	36.3	36.3	40.0	44.8	50.3
Weighted average shares (m)	2,038	2,039	2,041	2,042	2,042	2,042
Average market cap (NOKm)	52,775	69,384	72,620	70,115	70,115	70,115
Enterprise value (NOKm)	39,187	61,296	56,770	56,914	52,687	45,894
Valuation Metrics						
P/E (DB) (x)	27.8	18.6	10.8	19.4	14.2	6.7
P/E (Reported) (x)	nm	86.9	35.9	14.2	11.8	9.3
P/BV (x)	0.79	1.17	0.91	0.86	0.77	0.68
FCF Yield (%)	4.6	4.0	12.7	0.1	8.2	12.5
Dividend Yield (%)	2.9	2.9	2.8	2.2	2.8	6.0
EV/Sales (x)	0.6	0.8	0.6	0.7	0.5	0.4
EV/EBITDA (x)	6.5	5.9	4.3	4.2	3.5	2.5
EV/EBIT (x)	23.4	10.8	6.9	6.8	5.5	3.7
Income Statement (NOKm)						
Sales revenue	65,359	79,075	88,642	87,126	99,586	106,068
Gross profit	6,066	10,444	13,282	13,690	15,102	18,074
EBITDA	6,066	10,444	13,282	13,690	15,102	18,074
Depreciation	4,392	4,770	5,023	5,351	5,607	5,583
Amortisation	0	0	0	0	0	0
EBIT	1,674	5,674	8,259	8,339	9,495	12,491
Net interest income(expense)	-2,550	-3,553	-4,833	-854	-704	-1,007
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	-876	2,121	3,426	7,485	8,791	11,484
Income tax expense	153	892	1,092	2,244	2,525	3,266
Minorities	82	431	312	316	305	654
Other post-tax income/(expense)	189	0	0	0	0	0
Net profit	-922	798	2,022	4,925	5,961	7,563
DB adjustments (including dilution)	2,823	2,930	4,687	-1,307	-1,036	2,909
DB Net profit	1,901	3,728	6,709	3,618	4,925	10,472
Cash Flow (NOKm)						
Cash flow from operations	5,074	5,965	14,373	8,045	9,957	12,433
Net Capex	-2,637	-3,181	-5,132	-7,973	-4,198	-3,671
Free cash flow	2,437	2,784	9,241	72	5,759	8,763
Equity raised/(bought back)	56	21	35	0	0	0
Dividends paid	-1,528	-1,943	-2,370	-2,042	-1,532	-1,970
Net inc/(dec) in borrowings	-511	-1,346	-4,941	1,500	1,000	0
Other investing/financing cash flows	1,369	1,463	-4,296	-2,760	-3,863	-6,935
Net cash flow	1,823	979	-2,331	-3,230	1,365	-143
Change in working capital	*0*	*0*	*0*	*0*	*0*	*0*
Balance Sheet (NOKm)						
Cash and other liquid assets	10,892	11,039	12,669	14,490	20,904	25,812
Tangible fixed assets	50,670	55,719	51,174	58,847	62,487	65,625
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	23,767	24,042	25,271	24,413	24,089	24,286
Other assets	29,906	35,472	33,430	36,560	39,911	41,751
Total assets	115,235	126,272	122,544	134,310	147,392	157,474
Interest bearing debt	10,181	11,167	7,531	11,143	13,006	11,318
Other liabilities	29,790	35,164	35,683	36,266	37,701	38,174
Total liabilities	39,971	46,331	43,214	47,410	50,707	49,492
Shareholders' equity	69,981	74,030	74,171	81,741	91,526	102,823
Minorities	5,283	5,911	5,159	5,159	5,159	5,159
Total shareholders' equity	75,264	79,941	79,330	86,900	96,685	107,982
Net debt	*-711*	*128*	*-5,138*	*-3,346*	*-7,898*	*-14,494*
Key Company Metrics						
Sales growth (%)	1.2	21.0	12.1	-1.7	14.3	6.5
DB EPS growth (%)	277.0	96.0	79.8	-46.1	36.1	112.6
EBITDA Margin (%)	9.3	13.2	15.0	15.7	15.2	17.0
EBIT Margin (%)	2.6	7.2	9.3	9.6	9.5	11.8
Payout ratio (%)	nm	255.5	100.9	31.1	33.0	55.4
ROE (%)	-1.3	1.1	2.7	6.3	6.9	7.8
Capex/sales (%)	4.1	4.2	5.9	9.2	4.2	3.5
Capex/depreciation (x)	0.6	0.7	1.0	1.5	0.7	0.7
Net debt/equity (%)	-0.9	0.2	-6.5	-3.9	-8.2	-13.4
Net interest cover (x)	0.7	1.6	1.7	9.8	13.5	12.4

Source: Company data, Deutsche Bank estimates

Nyrstar NV

Hold

Reuters: NYR.BR Exchange: BRU Ticker: NYR

Just needs to stop the mining cash burn and deliver the smelter project

Price target (EUR)	0.98
EURO (STOXXE)	3,060

Our investment case:

1. **Finally returning to what it does best**: Nyrstar's latest strategy to focus solely on its smelter fleet finally returns the company to its core competency. Post the ramp up of Port Pirie and other smelter improvement projects, the company should be able to generate between €400- €500m of EBITDA from its smelting businesses alone each year.

2. **But still a work to do to overcome the legacy of past failed strategies.** The company has three critical deliverables for this year. 1) Stop the mining cash burn – the company estimates this will run at an annual rate of -€80m and hence is selling the mines, it expects initial offers to be in by the end of Feb and wants the transactions to be completed by mid year. 2) deliver the smelter enhancement – At spot prices, the Port Pirie upgrade is expected to boost EBITDA by €80m, the project is due to be commissioned from mid 2016 and we need to start seeing benefits in the second half and 3) Reflate the balance sheet – the company completed its rights issue (the second in 2 years) but still needs to top up its balance sheet with operating cash flow.

As a result of the lowering of our commodity price forecasts, we have lowered our Nyrstar earnings expectations back to break even in 2016 and down -4% in 2017.

Key catalysts for the stock:

- A ramp in the zinc price or ongoing weakening of the Euro would be key catalysts for the stock.
- Early/successful delivery of its smelter projects
- Early/successful closure or sale of its cash burning mining operations.

Valuation and risks:

Our TP is set at 0.73x our NPV in line with its market performance, using a WACC of 10%. Nyrstar is highly leveraged to the zinc price and the Euro, thus differences in these values from our expectations are the biggest risk factors. Other key risks to valuation sit with timing, size and form of its capital restructuring. Nyrstar is highly leveraged to the zinc price risk while a better than-expected project delivery offers upside risk.

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Model updated:18 March 2016

Running the numbers

Europe

Belgium

Metals & Mining

Nyrstar NV

Reuters: NYR.BR Bloomberg: NYR BB

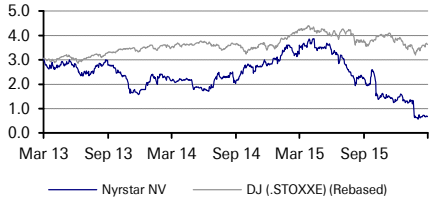
Hold

Price (17 Mar 16)	EUR 0.69
Target Price	EUR 0.98
52 Week range	EUR 0.57 - 3.87
Market Cap (m)	EURm 576
	USDm 652

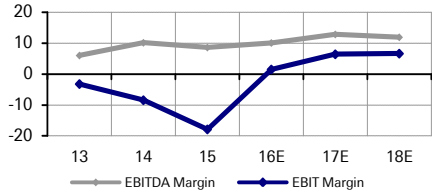
Company Profile

Nyrstar is the global leader in zinc smelting (~10% market share) with assets in Europe, Australia, the US and JVs in Asia. It also owns and operates a lead smelter in Australia, has a 50% interest in a lead recycling business in Australia and generates a small amount of its earnings from downstream zinc businesses in Asia and France. The company was formed in late 2007 through the combination of these assets from Zinifex (Australia) and Umicore (Belgium). The company's largest sensitivities in order are; the Eur/USD exchange rate, the LME zinc price and the Zinc treatment charge (the benchmark price is negotiated annually).

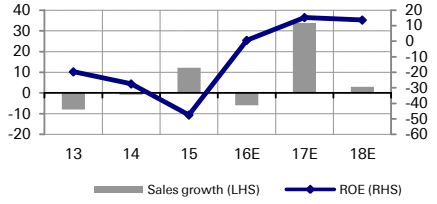
Price Performance



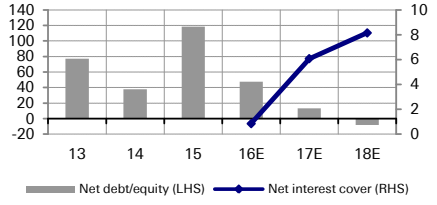
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (EUR)	-1.29	-0.27	-0.07	0.01	0.17	0.19
Reported EPS (EUR)	-1.29	-1.19	-1.19	0.01	0.17	0.19
DPS (EUR)	0.00	0.00	0.00	0.00	0.05	0.06
BVPS (EUR)	5.6	3.5	2.0	1.1	1.3	1.5
Weighted average shares (m)	154	235	327	834	936	952
Average market cap (EURm)	414	538	899	576	576	576
Enterprise value (EURm)	1,307	1,202	1,906	1,298	978	705
Valuation Metrics						
P/E (DB) (x)	nm	nm	nm	96.8	4.0	3.7
P/E (Reported) (x)	nm	nm	nm	96.8	4.0	3.7
P/BV (x)	0.32	0.83	0.81	0.65	0.55	0.46
FCF Yield (%)	24.6	4.1	nm	nm	53.9	30.2
Dividend Yield (%)	0.0	0.0	0.0	0.0	7.5	8.0
EV/Sales (x)	0.5	0.4	0.6	0.4	0.2	0.2
EV/EBITDA (x)	7.7	4.2	7.1	4.4	1.9	1.5
EV/EBIT (x)	nm	nm	nm	29.3	3.9	2.6
Income Statement (EURm)						
Sales revenue	2,824	2,799	3,139	2,953	3,951	4,072
Gross profit	117	284	270	298	507	486
EBITDA	170	284	270	298	507	486
Depreciation	220	259	251	254	253	215
Amortisation	40	261	580	0	0	0
EBIT	-90	-236	-561	44	254	270
Net interest income(expense)	-99	-108	-115	-52	-42	-33
Associates/affiliates	1	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	1	0	0	0	0
Profit before tax	-189	-343	-677	-8	212	237
Income tax expense	11	-57	-245	-7	51	58
Minorities	0	0	0	-1	-1	-1
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-200	-285	-432	0	161	179
DB adjustments (including dilution)	0	222	405	5	5	0
DB Net profit	-200	-63	-27	5	166	179
Cash Flow (EURm)						
Cash flow from operations	295	314	-107	264	551	344
Net Capex	-193	-292	-395	-293	-203	-145
Free cash flow	102	22	-502	-29	348	198
Equity raised/(bought back)	12	256	22	314	40	191
Dividends paid	-24	0	0	1	1	-48
Net inc/(dec) in borrowings	21	-133	66	-315	-169	-69
Other investing/financing cash flows	0	0	0	0	0	0
Net cash flow	111	145	-414	-30	220	273
Change in working capital	*206*	*103*	*-229*	*-32*	*95*	*-89*
Balance Sheet (EURm)						
Cash and other liquid assets	292	499	116	86	306	580
Tangible fixed assets	1,772	1,917	1,608	1,648	1,597	1,527
Goodwill/intangible assets	10	14	11	11	11	11
Associates/investments	46	44	24	24	24	24
Other assets	1,100	1,310	1,254	1,241	1,314	1,418
Total assets	3,220	3,784	3,014	3,010	3,253	3,561
Interest bearing debt	962	937	877	562	462	462
Other liabilities	1,388	1,692	1,493	1,447	1,616	1,646
Total liabilities	2,350	2,629	2,370	2,010	2,078	2,109
Shareholders' equity	870	1,155	644	1,000	1,175	1,452
Minorities	0	0	0	0	0	0
Total shareholders' equity	870	1,155	644	1,000	1,175	1,452
Net debt	*670*	*438*	*761*	*476*	*156*	*-117*
Key Company Metrics						
Sales growth (%)	-8.0	-0.9	12.2	-5.9	33.8	3.1
DB EPS growth (%)	-136.3	79.2	72.6	na	2,304.8	7.8
EBITDA Margin (%)	6.0	10.1	8.6	10.1	12.8	11.9
EBIT Margin (%)	-3.2	-8.4	-17.9	1.5	6.4	6.6
Payout ratio (%)	nm	nm	nm	0.0	30.0	29.5
ROE (%)	-19.7	-27.5	-47.5	0.6	15.3	13.6
Capex/sales (%)	6.8	10.5	12.8	9.9	5.1	3.6
Capex/depreciation (x)	0.9	1.1	1.6	1.2	0.8	0.7
Net debt/equity (%)	77.0	37.9	118.3	47.6	13.3	-8.1
Net interest cover (x)	nm	nm	nm	0.9	6.1	8.2

Source: Company data, Deutsche Bank estimates

Polymetal

Hold

Reuters: POLYP.L Exchange: MICEX Ticker: POLY

Growing FCF yield but shares expensive

Price target (GBP)	560
FTSE 100 INDEX	6,190

Key themes for 2016:

- **Shares are expensive:** We expect Polymetal will continue to have high EBITDA margins and robust FCF generation under our new gold and silver price deck and driven by cost management, which should keep AISC costs between US$740-820/oz. On a P/NPV basis however, the shares are expensive at 1.45x.
- **Resetting our gold/silver ratio:** Given the recent surge upwards in the gold silver ratio, Polymetal has re-set its medium-term production guidance using a ratio of 80 (gold/silver) instead of its previous 60x assumption. We have also pushed up our gold/silver ratio to an average of 78x in the next three years.
- **Polymetal continues to seek early-stage projects** and mines as acquisition opportunities to supplement its growth pipeline. In early March, it announced the acquisition of the Kapan mine in south-eastern Armenia for a total consideration of US$25m. Once the deal has closed, due 2Q16, Polymetal will assess the potential for extracting synergies between Kapan and the Lichkvaz deposit which the group acquired in November 2015, its first asset in Armenia. Kapan is already in operation. The complex comprises a fully mechanised underground mine, a floatation concentrator and infrastructure facilities. The mine produces gold-copper-silver and zinc concentrates, thus representing a small revenue diversification opportunity for Polymetal. In 2015, it produced 21koz of gold, 1kt of copper, 5kt of zinc and 400koz of silver. Cash costs of the mine are reasonable, in the second quartile of the gold cost curve, at US$709/gold ounce sold in 2015.

Key events:

- FY15 financial results: 29 March 2016
- Investor Day: 18 May 2016

Valuation and risks:

- Our price target is set at a 10% discount to our DCF valuation, to reflect the ranking we assign to Polymetal within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow. We value Polymetal from a sum-of-the-parts life-of-mine DCF model. We apply a 9% WACC based on a targeted capital structure of 70% equity and 30% debt.
- Key risks include silver and gold prices significantly higher/lower than our expectation as well as Russian macroeconomic factors such as ruble appreciation/depreciation. Management risks are concentrated around its ability to integrate newly acquired deposits. Other risks include changes in fiscal regimes and/or mining legislation. 90% of Polymetal's assets are in Russia, with the residual 10% in Kazakhstan.

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Model updated:16 March 2016

Running the numbers

Emerging Europe

Russia

Metals & Mining

Polymetal

Reuters: POLYP.L Bloomberg: POLY LN

Hold

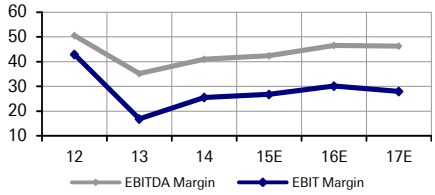
Price (17 Mar 16)	GBP 725.00
Target Price	GBP 560.00
52 Week range	GBP 427.10 - 732.00
Market Cap (m)	GBPm 3,062
	USDm 4,437

Company Profile

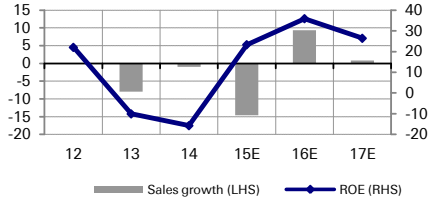
Polymetal International is the holding company of Polymetal, a leading Russian gold and silver miner. In 2010, Polymetal was the fourth largest gold producer in Russia by production volume and its largest silver producer, ranked eighth worldwide Polymetal produced 810koz of gold equivalent in 2011 at six operating assets and targets a 73% organic growth in gold equivalent output by 2014.

Price Performance

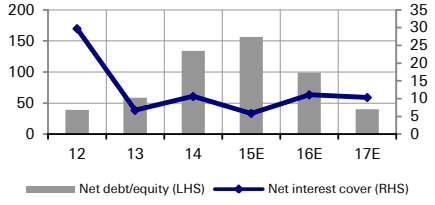
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2012	2013	2014	2015E	2016E	2017E
Financial Summary						
DB EPS (USD)	1.13	0.30	-0.61	0.52	0.73	0.68
Reported EPS (USD)	1.10	-0.51	-0.53	0.47	0.73	0.68
DPS (USD)	0.81	0.09	0.36	0.50	0.22	0.20
BVPS (USD)	5.6	4.6	2.2	1.9	2.1	3.0
Weighted average shares (m)	383	386	397	422	424	424
Average market cap (USDm)	6,088	4,420	3,645	4,437	4,437	4,437
Enterprise value (USDm)	6,888	5,427	4,796	5,695	5,568	4,919
Valuation Metrics						
P/E (DB) (x)	14.1	37.8	nm	20.4	14.3	15.4
P/E (Reported) (x)	14.5	nm	nm	22.4	14.3	15.4
P/BV (x)	3.39	2.05	4.11	5.52	4.97	3.49
FCF Yield (%)	2.8	3.2	8.4	5.5	8.1	12.5
Dividend Yield (%)	5.1	0.8	3.9	4.8	2.1	1.9
EV/Sales (x)	3.7	3.2	2.8	3.9	3.5	3.1
EV/EBITDA (x)	7.3	9.0	6.9	9.3	7.6	6.7
EV/EBIT (x)	8.7	18.9	11.1	14.7	11.7	11.0
Income Statement (USDm)						
Sales revenue	1,854	1,707	1,690	1,443	1,579	1,592
Gross profit	1,149	829	929	828	995	1,003
EBITDA	938	601	693	612	736	738
Depreciation	142	238	260	226	260	292
Amortisation	0	76	0	0	0	0
EBIT	796	287	432	386	476	446
Net interest income(expense)	-27	-43	-41	-66	-43	-43
Associates/affiliates	-2	-2	-7	0	0	0
Exceptionals/extraordinaries	-21	-310	35	-20	0	0
Other pre-tax income/(expense)	-95	-90	-558	-2	2	2
Profit before tax	651	-158	-138	298	435	404
Income tax expense	223	40	71	100	126	117
Minorities	7	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	421	-198	-209	197	308	287
DB adjustments (including dilution)	10	315	-35	20	0	0
DB Net profit	431	117	-244	217	308	287
Cash Flow (USDm)						
Cash flow from operations	541	462	515	476	683	861
Net Capex	-372	-319	-210	-233	-321	-306
Free cash flow	169	142	305	243	361	555
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-77	-316	-65	-307	-98	-89
Net inc/(dec) in borrowings	-149	213	202	85	-84	-114
Other investing/financing cash flows	-584	8	-350	-80	-18	0
Net cash flow	-640	47	92	-59	161	351
Change in working capital	*-212*	*0*	*-81*	*-12*	*114*	*283*
Balance Sheet (USDm)						
Cash and other liquid assets	19	66	157	121	414	926
Tangible fixed assets	2,206	2,095	2,021	2,001	2,062	2,076
Goodwill/intangible assets	115	31	18	18	18	18
Associates/investments	45	39	15	29	29	29
Other assets	1,254	1,025	786	933	818	539
Total assets	3,638	3,255	2,997	3,102	3,341	3,589
Interest bearing debt	864	1,111	1,323	1,408	1,438	1,438
Other liabilities	622	356	805	872	871	877
Total liabilities	1,486	1,467	2,128	2,280	2,309	2,314
Shareholders' equity	2,152	1,787	869	822	896	1,274
Minorities	0	0	0	0	137	0
Total shareholders' equity	2,152	1,787	869	822	1,033	1,274
Net debt	*845*	*1,046*	*1,165*	*1,287*	*1,023*	*511*
Key Company Metrics						
Sales growth (%)	nm	-8.0	-0.9	-14.6	9.4	0.9
DB EPS growth (%)	na	-73.1	na	na	42.0	-7.0
EBITDA Margin (%)	50.6	35.2	41.0	42.4	46.6	46.3
EBIT Margin (%)	42.9	16.8	25.6	26.8	30.1	28.0
Payout ratio (%)	73.6	nm	nm	106.9	30.0	30.0
ROE (%)	22.1	-10.1	-15.7	23.3	35.9	26.4
Capex/sales (%)	21.4	18.7	12.4	16.2	20.3	19.2
Capex/depreciation (x)	2.8	1.3	0.8	1.0	1.2	1.0
Net debt/equity (%)	39.3	58.5	134.0	156.5	99.1	40.1
Net interest cover (x)	29.7	6.7	10.6	5.8	11.1	10.3

Source: Company data, Deutsche Bank estimates

Randgold Resources

Hold

Reuters: RRS.L Exchange:LSE Ticker: RRS

Expanding margins but low FCF and testing valuation

Price target (GBP)	5,630
FTSE 100 INDEX	6,190

Key themes for 2016:

- **Quality company:** We cannot dispute the quality of Randgold's assets or its management team which has delivered sector-leading shareholder returns from a solid, value creating strategy. We have written extensively about that strategy of delivering a minimum 20% IRR from the organic discovery and development of gold deposits which meet that hurdle rate at US$1,000/oz gold. To read our in-depth analysis of Randgold's strategy, please see our FITT note "Africa: The next frontier" 20 October 2015.

- **Overheated shares**: After the 58% rally in Randgold shares year to date, we have run out of upside to our NPV-derived target price of £56.30. We believe investors should consider taking profits and switch into Acacia which offers more operational gearing to gold, or Nordgold which is cheaper. Whilst we still forecast Randgold to deliver expanding EBITDA margins – from 38% in 2016 to 47% in 2018 - FCF yields remain low at 1.7% in both 2016 and 2017, - and valuation on an NPV basis is full at 1.28x.

Valuation and risks:

- Our price target is set at a 10% premium our NPV, to reflect the ranking we assign to Randgold within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow. We derive our NVP from a DCF model of life of mine cash flows. We use a long-term gold price of US$1,300/oz and a WACC of 5% (based on a risk-free rate of 4%, a market risk premium of 6%, a beta of 0.3x and a 30% target gearing).

- Key risks include higher or lower-than-expected gold prices, lower or higher-than-expected costs, particularly due to labour inflation, and volatility in the Euro/Dollar exchange rate.

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Model updated:16 March 2016

Running the numbers

Europe

United Kingdom

Gold

Randgold

Reuters: RRS.L Bloomberg: RRS LN

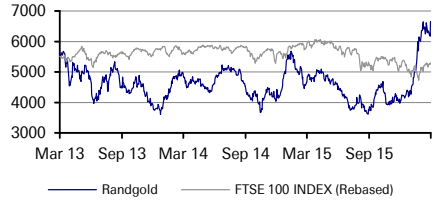
Hold

Price (17 Mar 16)	GBP 6,655.00
Target Price	GBP 5,630.00
52 Week range	GBP 3,625.00 - 6,655.00
Market Cap (m)	GBPm 6,204
	USDm 8,990

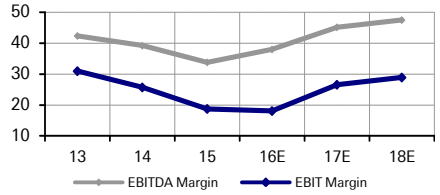
Company Profile

Randgold Resources is a gold exploration and mining company focusing on prospective regions in West Africa and the Congo Craton. The company currently has three operating mines and one low-grade stockpile processing facility in Mali and the Cote d'Ivoire, producing c.750koz of gold in 2011F. The company plans to ramp up its newly commissioned mines and grow the portfolio to five mines producing c.1.2Moz of gold by 2014.

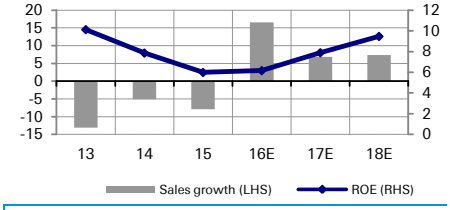
Price Performance



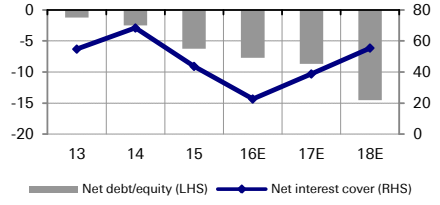
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	3.00	2.52	2.01	2.15	2.90	3.72
Reported EPS (USD)	3.00	2.52	2.01	2.15	2.90	3.72
DPS (USD)	0.50	0.60	0.66	0.68	0.70	0.72
BVPS (USD)	31.2	33.4	34.4	35.8	38.1	41.1
Weighted average shares (m)	92	93	93	93	93	93
Average market cap (USDm)	7,089	6,942	6,374	8,990	8,990	8,990
Enterprise value (USDm)	7,227	7,062	6,378	8,971	8,969	8,761
Valuation Metrics						
P/E (DB) (x)	25.6	29.8	34.0	44.9	33.3	25.9
P/E (Reported) (x)	25.6	29.8	34.0	44.9	33.3	25.9
P/BV (x)	2.01	2.05	1.79	2.69	2.53	2.35
FCF Yield (%)	nm	1.4	2.1	1.6	1.6	4.2
Dividend Yield (%)	0.7	0.8	1.0	0.7	0.7	0.7
EV/Sales (x)	6.3	6.5	6.4	7.7	7.2	6.5
EV/EBITDA (x)	14.9	16.6	18.8	20.2	15.9	13.8
EV/EBIT (x)	20.4	25.3	34.0	42.5	27.1	22.6
Income Statement (USDm)						
Sales revenue	1,145	1,087	1,001	1,167	1,247	1,338
Gross profit	536	462	374	500	616	688
EBITDA	485	426	339	443	563	635
Depreciation	131	147	151	232	232	248
Amortisation	0	0	0	0	0	0
EBIT	355	279	188	211	331	387
Net interest income(expense)	-6	-4	-4	-9	-9	-7
Associates/affiliates	54	78	77	101	101	154
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	403	353	261	303	424	534
Income tax expense	77	82	48	60	97	114
Minorities	47	36	24	41	55	71
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	278	235	189	202	272	349
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	278	235	189	202	272	349
Cash Flow (USDm)						
Cash flow from operations	445	317	352	426	507	664
Net Capex	-728	-222	-218	-279	-360	-285
Free cash flow	-283	96	134	147	148	379
Equity raised/(bought back)	1	2	0	0	0	0
Dividends paid	-73	-53	-49	-82	-91	-101
Net inc/(dec) in borrowings	0	0	0	0	0	0
Other investing/financing cash flows	2	1	45	0	0	0
Net cash flow	-353	45	130	65	57	278
Change in working capital	*0*	*0*	*0*	*0*	*0*	*0*
Balance Sheet (USDm)						
Cash and other liquid assets	38	83	213	278	335	613
Tangible fixed assets	1,458	1,495	1,547	1,593	1,721	1,758
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	2	1	1	1	1	1
Other assets	1,879	1,954	1,976	2,164	2,205	2,216
Total assets	3,377	3,533	3,737	4,036	4,262	4,588
Interest bearing debt	0	0	0	0	0	0
Other liabilities	319	230	245	255	245	251
Total liabilities	319	230	245	255	245	251
Shareholders' equity	2,879	3,098	3,203	3,341	3,548	3,830
Minorities	179	205	219	259	314	385
Total shareholders' equity	3,058	3,303	3,422	3,601	3,862	4,215
Net debt	*-38*	*-83*	*-213*	*-278*	*-335*	*-613*
Key Company Metrics						
Sales growth (%)	-13.1	-5.1	-7.9	16.5	6.8	7.3
DB EPS growth (%)	-35.5	-16.0	-20.2	6.9	34.9	28.5
EBITDA Margin (%)	42.4	39.2	33.8	38.0	45.2	47.5
EBIT Margin (%)	31.0	25.7	18.7	18.1	26.6	28.9
Payout ratio (%)	16.6	23.7	32.6	31.4	24.0	19.2
ROE (%)	10.1	7.9	6.0	6.2	7.9	9.5
Capex/sales (%)	63.6	20.4	21.7	23.9	28.9	21.3
Capex/depreciation (x)	5.6	1.5	1.4	1.2	1.6	1.1
Net debt/equity (%)	-1.2	-2.5	-6.2	-7.7	-8.7	-14.6
Net interest cover (x)	54.8	68.4	43.7	22.7	38.8	55.5

Source: Company data, Deutsche Bank estimates

Rio Tinto

Buy

Reuters: RIO.L Exchange:LSE Ticker:RIO

The dawn of a new era

Price target (GBp)	3,000
FTSE 100 INDEX	6,190

Our investment case:

1. **Sticking with the basics for now:** Against a backdrop of extremely complex supply and demand dynamics in the commodity markets, Rio's simple strategy of reducing costs and inventories and paying down debt offers a significant comfort for the market. However the very recent change in CEO heralds change.

2. **Dominant iron ore position:** While the iron ore price has come under pressure, Rio's low cost position means that it is continuing to generate over 50% margins on its iron ore. While the earnings are robust, the sentiment around the volatile iron ore price will continue to dictate the short-term moves.

3. **Quality aluminium portfolio:** Rio's earnings exceeded market expectations in the first half of 2015 and the beat was predominantly in the aluminium division. We expect this to happen again in February 2016 when the company presents its full year results. The last company provided consensus earnings expectations for the division are US$1.09b from a half year result of US$0.79b. We are at the top end of consensus at US$1.45b and remain very comfortable at this level, with bauxite, achieved metal premiums, and cost cutting driving the solid result.

4. **A new CEO and the next leg in strategy:** With the balance sheet in hand, we expect the Rio Tinto Board to do what quality Mining Boards should be doing at the bottom of the cycle – picking up quality assets. To this end, we expect the new CEO's mandate to include potential M&A which while positive for the longer term will suffer the usual criticism from the market in the first instance (buyers curse). We also expect the usual shuffling/resignations in the senior ranks over the next 18 months which could have a destabilizing impact if not handled correctly.

Key catalysts for the stock:

- The iron ore price finding a floor.
- Ongoing cost reduction and balance sheet reflation.

Changes made:

We have included the updated commodity and fx assumptions in our model. The cut in our commodity price expectation has moved our 2016 and 2017 earnings expectations by -16% and -25% respectively.

Valuation and risks:

Our PT is set at 1.12x our DCF derived valuation in line with its relative sector performance (9.3% WACC, CoE 10.5%, CoD 3.6%, RFR 3.0%, ERP 6%, beta 1.25). It reflects the cash on the balance sheet as well as the lower costs. Downside risks include weaker commodity prices and higher costs.

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Model updated:21 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Rio Tinto

Reuters: RIO.L Bloomberg: RIO LN

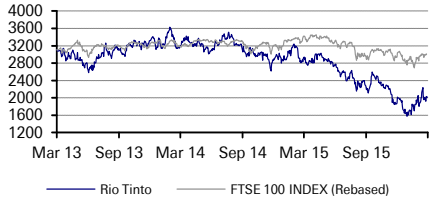
Buy

Price (21 Mar 16)	GBP 2,014.00
Target Price	GBP 3,000.00
52 Week range	GBP 1,577.50 - 3,030.00
Market Cap (m)	GBPm 36,567
	USDm 53,079

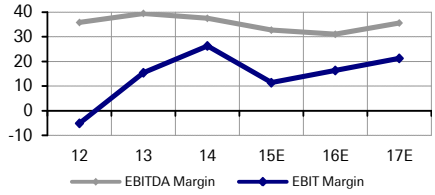
Company Profile

Rio Tinto is a global diversified mining company with interests in aluminum, borax, coal, copper, diamonds, gold, iron ore, titanium dioxide feedstock, uranium and zinc. Its key mining operations are located in Australia, New Zealand, South Africa, South America, the United States, Europe, and Canada. Rio Tinto's management structure is based primarily on six principal global products businesses Aluminium, Diamonds, Copper, Energy (coal and uranium), Industrial Minerals, and Iron Ore supported by worldwide exploration and technology groups.

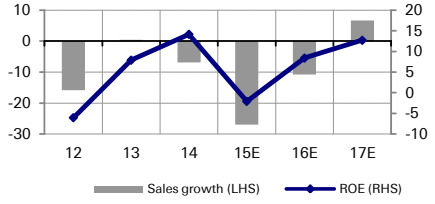
Price Performance



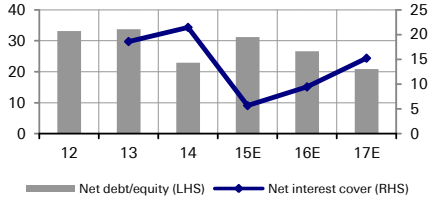
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2012	2013	2014	2015E	2016E	2017E
Financial Summary						
DB EPS (USD)	5.01	5.50	5.02	2.50	1.69	2.49
Reported EPS (USD)	-1.61	1.97	3.52	-0.48	1.69	2.49
DPS (USD)	1.67	1.92	2.15	2.15	1.10	1.25
BVPS (USD)	25.3	24.8	25.0	20.7	19.6	19.6
Weighted average shares (m)	1,852	1,852	1,853	1,816	1,805	1,805
Average market cap (USDm)	94,549	91,212	97,549	53,079	53,079	53,079
Enterprise value (USDm)	117,000	110,477	111,964	67,689	65,023	62,480
Valuation Metrics						
P/E (DB) (x)	10.2	9.0	10.5	11.7	17.3	11.7
P/E (Reported) (x)	nm	25.0	14.9	nm	17.3	11.7
P/BV (x)	2.25	2.27	1.88	1.44	1.49	1.49
FCF Yield (%)	nm	2.6	6.5	4.5	9.9	8.8
Dividend Yield (%)	3.3	3.9	4.1	7.4	3.8	4.3
EV/Sales (x)	2.3	2.2	2.3	1.9	2.1	1.9
EV/EBITDA (x)	6.4	5.5	6.3	5.9	6.7	5.3
EV/EBIT (x)	nm	14.0	8.9	17.0	12.8	8.9
Income Statement (USDm)						
Sales revenue	50,967	51,171	47,664	34,829	31,071	33,128
Gross profit	17,872	19,858	18,614	11,555	10,402	12,392
EBITDA	18,275	20,234	17,893	11,412	9,657	11,811
Depreciation	4,441	4,791	4,860	4,645	4,563	4,755
Amortisation	16,410	7,531	473	2,791	0	0
EBIT	-2,576	7,912	12,560	3,976	5,094	7,057
Net interest income(expense)	-160	-425	-585	-698	-539	-463
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-7	0	0	0	0	0
Other pre-tax income/(expense)	168	-3,982	-2,423	-4,004	-350	-350
Profit before tax	-2,568	3,505	9,552	-726	4,205	6,244
Income tax expense	429	2,426	3,053	993	1,304	1,936
Minorities	-14	-2,586	-28	-853	-156	-188
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	-2,990	3,665	6,527	-866	3,058	4,496
DB adjustments (including dilution)	12,293	6,552	2,778	5,406	0	0
DB Net profit	9,303	10,217	9,305	4,540	3,058	4,496
Cash Flow (USDm)						
Cash flow from operations	9,368	15,078	14,286	7,089	8,419	9,320
Net Capex	-17,575	-12,720	-7,990	-4,723	-3,168	-4,665
Free cash flow	-8,207	2,358	6,296	2,366	5,250	4,655
Equity raised/(bought back)	1,474	0	0	-2,028	0	0
Dividends paid	-3,038	-3,322	-3,710	-4,076	-2,662	-2,207
Net inc/(dec) in borrowings	7,888	2,122	-3,034	-1,681	-2,683	-1,740
Other investing/financing cash flows	-666	1,756	2,639	79	0	0
Net cash flow	-2,549	2,914	2,191	-5,340	-95	708
Change in working capital	*401*	*557*	*1,519*	*1,499*	*227*	*-464*
Balance Sheet (USDm)						
Cash and other liquid assets	7,082	10,216	12,423	9,366	9,271	9,979
Tangible fixed assets	75,131	70,827	68,693	61,057	59,662	59,572
Goodwill/intangible assets	9,402	6,770	7,108	4,228	3,878	3,528
Associates/investments	7,966	6,406	6,389	5,952	5,952	5,952
Other assets	17,992	16,806	13,214	10,961	10,791	11,390
Total assets	117,573	111,025	107,827	91,564	89,554	90,421
Interest bearing debt	26,343	28,271	24,918	23,149	20,466	18,726
Other liabilities	32,915	29,425	28,315	24,373	26,970	29,777
Total liabilities	59,258	57,696	53,233	47,522	47,436	48,503
Shareholders' equity	46,865	45,886	46,285	37,349	35,418	35,312
Minorities	11,156	7,616	8,309	6,779	6,701	6,607
Total shareholders' equity	58,021	53,502	54,594	44,128	42,118	41,919
Net debt	*19,261*	*18,055*	*12,495*	*13,783*	*11,195*	*8,747*
Key Company Metrics						
Sales growth (%)	-15.8	0.4	-6.9	-26.9	-10.8	6.6
DB EPS growth (%)	-37.9	9.8	-8.7	-50.2	-32.3	47.0
EBITDA Margin (%)	35.9	39.5	37.5	32.8	31.1	35.7
EBIT Margin (%)	-5.1	15.5	26.4	11.4	16.4	21.3
Payout ratio (%)	nm	97.0	61.1	nm	64.9	50.0
ROE (%)	-6.0	7.9	14.2	-2.1	8.4	12.7
Capex/sales (%)	34.5	25.3	17.1	13.5	12.6	14.3
Capex/depreciation (x)	4.0	2.7	1.7	1.0	0.9	1.0
Net debt/equity (%)	33.2	33.7	22.9	31.2	26.6	20.9
Net interest cover (x)	nm	18.6	21.5	5.7	9.5	15.3

Source: Company data, Deutsche Bank estimates

South32

Hold

Reuters: S32.L Exchange: LSE Ticker: S32

The year to deliver cost cutting success

Price target (GBP)	80
FTSE 100 INDEX	6,190

The key themes for 2016:

- **Capex and opex targets are rightly punchy**: The asset-level cost and capex guidance given by management at the recent results either met or exceeded our expectations at most assets. FY16 capex guidance was reduced to US$550m (incl. manganese) from US$700m, below our previous US$625m estimate. Further, FY17 capex guidance was substantially lower than our expectations, with asset-level guidance suggesting capex could fall to US$400m next year (we were previously at US$552m). The most impressive cost reduction targets include Cerro Matoso (FY17 all-in costs of US$3.90/lb vs. US$4.74/lb achieved in 1H16), Illawarra (FY17 all-in costs of US$66/t vs. US$85/t in 1H16) and SA Manganese (FY17 all-in costs of US$1.90/dmtu vs. US$2.89/dmtu in 1H16).
- **M&A opportunities being assessed but not a lot out there for the right price:** With 95% of management time being spent on the existing assets, there is a focus on external opportunities but S32 commented that in general there are no bargain-basement prices on offer…yet, and therefore there is no rush. The answer which Mr. Harris gave to an indirect question about S32's potential interest in Anglo American's Brazilian Niobium and Phosphates business was well prepared however – the group has South American assets it could add to, to create a larger regional hub, but using existing core mining/refining competencies is a key criterion also. We think Anglo's for sale nickel assets (Barro Alto and Codemin) could fit the bill in this case.
- **Longer-term Greenfield growth is still a core part of the plan:** S32 would like to partner in a Greenfield drilling programme and has looked at 120 options across a variety of commodities, including copper, 70 in detail and at site level for some of those. So far, nothing has come up to tempt them…
- **High FCF yield:** We now have S32 generating c. US$436m of FCF in FY16, which puts the company on a FCF yield of around 10% and US$504m in FY17, a FCF yield of 12%.

Key events:

- 3Q16 quarterly report: 21 April 2016

Valuation and risks:

- We derive our valuation for South32 from a sum-of-the-parts DCF model, aggregating life of mine cash flows for each asset. We derive a group NPV using a nominal WACC of 10% (CoE 11.5%, Rf 4%, Rp 6.0%; CoD 6% on a D/E of 20%; Beta of 1.25). We set our target price in line with our NPV.
- The key risks to our target price are:(i) more cost cutting than we currently forecast, (ii) higher sustaining capex, particularly for the aluminium assets; (iii) more severe grade declines, resulting in larger falls in copper equivalent production; (iv) changes in BEE legislation in South Africa; (v) more severe electricity price increases in South Africa; and (vi) higher or lower commodity prices and stronger FX rates than we forecast.

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Model updated:21 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

South32

Reuters: S32.L Bloomberg: S32 LN

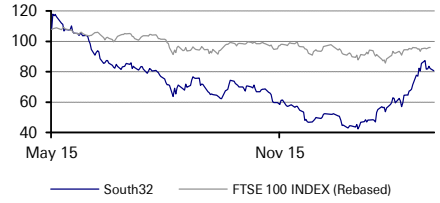
Hold

Price (21 Mar 16)	GBP 80.75
Target Price	GBP 80.00
52 Week range	GBP 42.50 - 118.00
Market Cap (m)	GBPm 4,299
	USDm 6,240

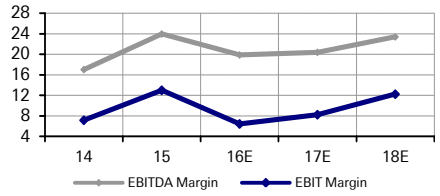
Company Profile

South32 is a diversified miner whose assets were previously owned by BHP Billiton. The portfolio includes the Illawarra met coal complex, Cannington base metals mine, GEMCO manganese mine, the Worsley bauxite mine and alumina refinery all in Australia; Energy Coal mines and Samancor Manganese in South Africa, Mozal aluminium smelter in Mozambique, MRN bauxite mine in Brazil, Cerro Matoso nickel mine in Colombia.

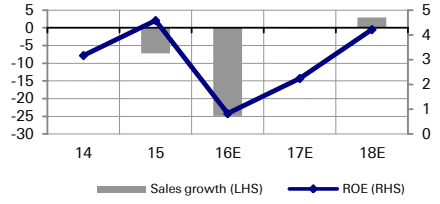
Price Performance



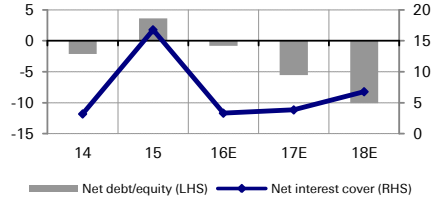
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 30-Jun	2014	2015	2016E	2017E	2018E
Financial Summary					
DB EPS (USD)	0.08	0.11	0.02	0.04	0.08
Reported EPS (USD)	0.08	0.11	0.02	0.04	0.08
DPS (USD)	0.00	0.00	0.00	0.02	0.03
BVPS (USD)	2.6	2.1	1.8	1.8	1.9
Weighted average shares (m)	5,321	5,324	5,324	5,324	5,324
Average market cap (USDm)	na	8,681	6,240	6,240	6,240
Enterprise value (USDm)	na	9,005	6,088	5,632	5,171
Valuation Metrics					
P/E (DB) (x)	na	15.1	74.1	29.4	15.2
P/E (Reported) (x)	na	15.1	74.1	29.4	15.2
P/BV (x)	0.00	0.65	0.67	0.65	0.63
FCF Yield (%)	na	13.9	7.5	9.5	11.9
Dividend Yield (%)	na	0.0	0.4	1.4	2.6
EV/Sales (x)	nm	1.2	1.0	1.0	0.9
EV/EBITDA (x)	nm	4.9	5.3	4.8	3.7
EV/EBIT (x)	nm	8.9	16.2	11.7	7.1
Income Statement (USDm)					
Sales revenue	8,344	7,743	5,819	5,812	5,982
Gross profit	1,715	1,877	1,067	1,343	1,565
EBITDA	1,421	1,855	1,157	1,184	1,399
Depreciation	823	848	781	705	667
Amortisation	0	0	0	0	0
EBIT	598	1,007	375	479	732
Net interest income(expense)	-187	-60	-113	-124	-108
Associates/affiliates	62	-6	-57	41	50
Exceptionals/extraordinaries	343	547	1,775	0	0
Other pre-tax income/(expense)	-323	-482	-1,728	0	0
Profit before tax	150	459	-1,523	396	675
Income tax expense	47	431	168	184	265
Minorities	0	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0
Net profit	446	575	84	212	409
DB adjustments (including dilution)	0	0	0	0	0
DB Net profit	446	575	84	212	409
Cash Flow (USDm)					
Cash flow from operations	1,419	1,838	926	981	1,144
Net Capex	-590	-629	-461	-389	-403
Free cash flow	829	1,209	466	592	741
Equity raised/(bought back)	0	0	0	0	0
Dividends paid	0	0	0	-48	-131
Net inc/(dec) in borrowings	-205	0	-188	0	0
Other investing/financing cash flows	-488	-658	-47	-88	-148
Net cash flow	136	551	231	456	461
Change in working capital	*1,562*	*136*	*-679*	*0*	*0*
Balance Sheet (USDm)					
Cash and other liquid assets	364	644	888	1,344	1,805
Tangible fixed assets	13,393	9,550	8,521	8,205	7,941
Goodwill/intangible assets	290	306	304	304	304
Associates/investments	107	77	77	77	77
Other assets	2,887	4,912	3,200	3,200	3,200
Total assets	17,041	15,489	12,990	13,130	13,327
Interest bearing debt	62	1,046	813	813	813
Other liabilities	2,904	3,408	2,840	2,745	2,657
Total liabilities	2,966	4,454	3,653	3,558	3,470
Shareholders' equity	14,075	11,036	9,338	9,573	9,858
Minorities	0	-1	-1	-1	-1
Total shareholders' equity	14,075	11,035	9,337	9,572	9,857
Net debt	*-302*	*402*	*-75*	*-531*	*-992*
Key Company Metrics					
Sales growth (%)	nm	-7.2	-24.8	-0.1	2.9
DB EPS growth (%)	na	29.3	-85.4	151.9	93.0
EBITDA Margin (%)	17.0	24.0	19.9	20.4	23.4
EBIT Margin (%)	7.2	13.0	6.4	8.2	12.2
Payout ratio (%)	0.0	0.0	27.6	40.0	40.0
ROE (%)	3.2	4.6	0.8	2.2	4.2
Capex/sales (%)	7.1	8.1	7.9	6.7	6.7
Capex/depreciation (x)	0.7	0.7	0.6	0.6	0.6
Net debt/equity (%)	-2.1	3.6	-0.8	-5.5	-10.1
Net interest cover (x)	3.2	16.8	3.3	3.9	6.8

Source: Company data, Deutsche Bank estimates

Vedanta Resources

Hold

Reuters: VED.L Exchange:LSE Ticker: VED

Upgrade to Hold on zinc and oil price recovery

Price target (GBP)	260
FTSE 100 INDEX	6,190

Key themes for 2016:

- **Better free cash flow…:** The 15% rally in the zinc price and the 17% recovery in the oil price year to date have provided relief for Vedanta's free cash flow: we now forecast FCF after sustaining capex of US$350m, up from US$290m previously. Growth capex of US$430m and dividends to minorities of US$140m still need to be funded however, so the group is not yet home and dry.
- **…but gearing remains high:** Despite the positive tailwinds from zinc and oil, the cut to our near and long-term iron ore and long-term copper prices keep EBITDA depressed and net debt high. Gearing therefore stays high on our forecasts, at 60% net debt/equity in FY16, dropping to 53% in FY17.
- **Debt roll and covenants to be renegotiated:** At the plc level, Vedanta has tied up financing for US$1.1bn of the US$2bn debt maturities it faces in FY17. There will be, or has been, a covenant test this month. This is likely to see Vedanta breach or come close to the max 2.75x net debt/EBITDA covenant but management indicated it is currently engaged with its lenders to build more headroom into its covenants to avoid a breach and is confident of a positive outcome.
- **Simplification stalling**? There could be some balance sheet relief if the proposed merger of Cairn India and Vedanta Ltd receives shareholder approval – the vote is due to take place in 1H16 calendar. The big win, however, would be a sale of the Indian government's stakes in HZL and Balco, which we think is critical for maximising cash fungibility across all group entities – this potential auction process has not progressed in the last 12 months.
- **A small positive in iron ore:** Whilst Vedanta guided to lower sales out of Goa this year (3.5mt down from 5-5.5mt), it is engaged on multiple fronts to resolve issues plaguing the high-cost mine. In the Union Budget which the India Finance Minister presented to the Indian Parliament in early March, the export duty on low grade Goan ore was removed. Management continues to lobby for a lift on mining caps, and negotiate with (i) unions to settle transport tariff disputes, and (ii) with the Supreme Court to resolve duplication of taxes.

Key events:

- 4Q16 production results: 11 April 2016; FY16 financial results: 12 May 2016

Valuation and risks

- Our price target is set at a 40% discount to our DCF valuation, to reflect the ranking we assign to Vedanta within our coverage universe. Our rankings are derived from debt reduction, P/E valuation, near-term earnings growth, and management action taken to control cash flow. Our DCF valuation (10.9% WACC - cost of equity 13%, post-tax cost of debt 6.1% and target gearing 30%: RFR 4.0%, ERP 6%) is calculated using life of mine cash flow analysis.
- Risks include higher/lower metal prices than we expect and a stronger/weaker Indian Rupee. A sale of the government's stake in Hindustan Zinc sooner than FY16 would also be an upside risk to our target price. Faster execution of projects and the turnaround plan for Copper Zambia are also upside risks, with downside risk from continued power shortages and tariff increases in Copper Zambia.

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Model updated:20 March 2016

Running the numbers

Europe

United Kingdom

Metals & Mining

Vedanta Resources

Reuters: VED.L Bloomberg: VED LN

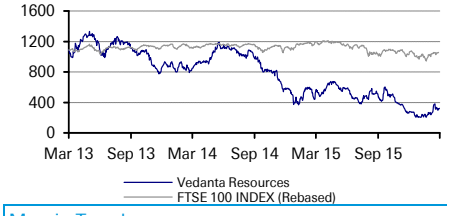
Hold

Price (21 Mar 16)	GBP 322.50
Target Price	GBP 260.00
52 Week range	GBP 205.80 - 675.00
Market Cap (m)	GBPm 889
	USDm 1,291

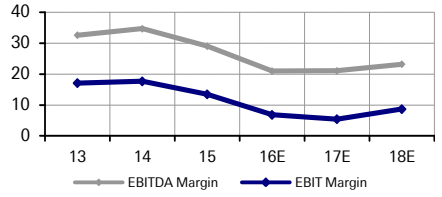
Company Profile

Vedanta Resources Ltd. mines and processes a variety of metals (copper, zinc and aluminium), with its core operations being domiciled in India. Since its listing in London in late 2003, the company has diversified its exposure by both metal and geography mostly via acquisition; Iron ore, power and oil in India, copper in Zambia and zinc in Southern Africa and Ireland.

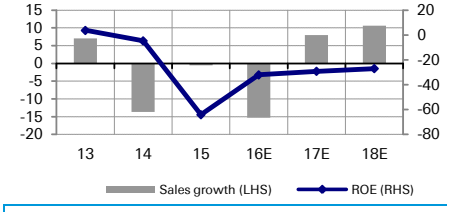
Price Performance



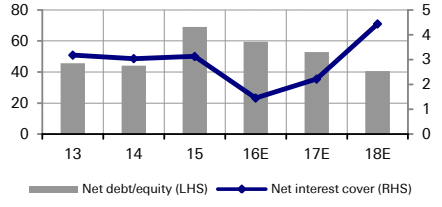
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Mar	2013	2014	2015	2016E	2017E	2018E
Financial Summary						
DB EPS (USD)	1.37	0.14	-0.14	-1.35	-1.62	-1.13
Reported EPS (USD)	0.62	-0.70	-6.55	-1.95	-1.62	-1.13
DPS (USD)	0.58	0.61	0.63	0.00	0.00	0.00
BVPS (USD)	16.1	14.7	5.8	6.4	4.7	3.6
Weighted average shares (m)	273	274	275	276	276	276
Average market cap (USDm)	4,635	4,538	3,707	1,291	1,291	1,291
Enterprise value (USDm)	25,327	24,535	24,244	20,587	19,740	18,341
Valuation Metrics						
P/E (DB) (x)	12.4	117.6	nm	nm	nm	nm
P/E (Reported) (x)	27.5	nm	nm	nm	nm	nm
P/BV (x)	0.95	1.03	1.27	0.74	0.99	1.30
FCF Yield (%)	15.4	18.2	nm	nm	65.6	108.4
Dividend Yield (%)	3.4	3.7	4.7	0.0	0.0	0.0
EV/Sales (x)	1.7	1.9	1.9	1.9	1.7	1.4
EV/EBITDA (x)	5.2	5.5	6.5	9.0	8.0	6.1
EV/EBIT (x)	9.9	10.7	14.0	27.7	30.8	16.2
Income Statement (USDm)						
Sales revenue	14,990	12,945	12,879	10,907	11,782	13,029
Gross profit	4,888	4,491	3,741	2,289	2,482	3,025
EBITDA	4,888	4,491	3,741	2,289	2,482	3,025
Depreciation	2,323	2,203	2,006	1,545	1,841	1,894
Amortisation	0	0	0	0	0	0
EBIT	2,565	2,288	1,736	744	641	1,131
Net interest income(expense)	-806	-752	-555	-512	-289	-255
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-42	-418	-6,821	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	1,717	1,118	-5,640	232	352	876
Income tax expense	40	129	-1,853	411	207	325
Minorities	1,508	1,185	-1,989	360	591	862
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	169	-197	-1,799	-538	-446	-311
DB adjustments (including dilution)	206	236	1,760	166	0	0
DB Net profit	375	40	-39	-372	-446	-311
Cash Flow (USDm)						
Cash flow from operations	2,946	3,015	2,165	593	1,915	2,252
Net Capex	-2,233	-2,187	-2,289	-807	-1,068	-853
Free cash flow	713	828	-124	-214	847	1,399
Equity raised/(bought back)	-784	-2,839	-819	-912	0	0
Dividends paid	-411	-508	-512	-144	-236	-345
Net inc/(dec) in borrowings	115	298	231	-76	0	0
Other investing/financing cash flows	210	-120	-795	-5	0	0
Net cash flow	-156	-2,341	-2,018	-1,351	610	1,054
Change in working capital	*10*	*630*	*131*	*-641*	*161*	*146*
Balance Sheet (USDm)						
Cash and other liquid assets	7,982	8,938	8,210	9,232	10,079	11,478
Tangible fixed assets	33,121	31,044	23,352	21,906	21,134	20,093
Goodwill/intangible assets	17	125	119	108	103	98
Associates/investments	1,046	1,653	1,314	1,189	1,189	1,189
Other assets	3,786	3,615	3,995	3,087	3,461	3,802
Total assets	45,950	45,374	36,989	35,522	35,966	36,659
Interest bearing debt	16,593	16,871	16,668	16,451	16,451	16,451
Other liabilities	10,496	10,528	8,064	6,927	7,462	7,949
Total liabilities	27,089	27,400	24,732	23,378	23,913	24,400
Shareholders' equity	4,398	4,010	1,603	1,754	1,308	997
Minorities	14,463	13,964	10,654	10,391	10,745	11,262
Total shareholders' equity	18,861	17,975	12,257	12,145	12,053	12,259
Net debt	*8,611*	*7,933*	*8,458*	*7,219*	*6,372*	*4,973*
Key Company Metrics						
Sales growth (%)	7.0	-13.6	-0.5	-15.3	8.0	10.6
DB EPS growth (%)	-1.8	-89.7	na	-853.8	-19.8	30.4
EBITDA Margin (%)	32.6	34.7	29.0	21.0	21.1	23.2
EBIT Margin (%)	17.1	17.7	13.5	6.8	5.4	8.7
Payout ratio (%)	93.9	nm	nm	nm	nm	nm
ROE (%)	3.7	-4.7	-64.1	-32.1	-29.2	-27.0
Capex/sales (%)	14.9	16.9	17.8	7.4	9.1	6.5
Capex/depreciation (x)	1.0	1.0	1.1	0.5	0.6	0.5
Net debt/equity (%)	45.7	44.1	69.0	59.4	52.9	40.6
Net interest cover (x)	3.2	3.0	3.1	1.5	2.2	4.4

Source: Company data, Deutsche Bank estimates

Research Contribution:
The authors of this report wish to acknowledge the contribution made by Ankit Agarwal and Srivathsan M, employees of Irevna, a division of CRISIL Limited, a third-party provider to Deutsche Bank of offshore research support services.

Appendix 1

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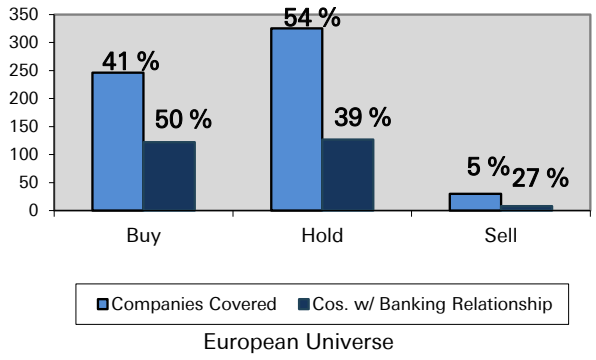

European Universe

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