GLOBAL

LME cash price

	US$/tonne	% change day on day
Aluminium	2,150	0.9
Copper	6,615	0.0
Lead	2,497	-0.8
Nickel	10,930	3.9
Tin	20,883	1.1
Zinc	3,302	0.1
Cobalt	59,291	1.3
Molybdenum	15,634	0.0

Other prices

		% change day on day
Gold (US$/oz)	1,279	1.3
Silver (US$/oz)	16.92	1.8
Platinum (US$/oz)	913	0.0
Palladium (US$/oz)	921	0.0
Oil WTI	49.61	0.6
USD:EUR exchange rate	1.176	0.3
AUD:USD exchange rate	0.777	0.0

LME/COMEX stocks

	Tonnes	Change
Aluminium	1,242,450	-4,425
LME copper	291,000	-2,450
Comex copper	181,379	415
Lead	154,875	-250
Nickel	384,864	-1,638
Tin	1,970	0
Zinc	258,575	7,875

Source: LME, Comex, Nymex, SHFE, Metal Bulletin, Reuters, LBMA, Macquarie Research, October 2017

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9 October 2017

Commodities Comment

Price forecast changes – bright future for EV metals as long as mines don't overreact

- Electric vehicles (EVs) promise – or threaten – major changes to commodity demand and prices. As we wrote recently, we have upgraded our EV sales projections and enhanced our assumption around battery mix and size to deliver updated demand forecasts for lithium, cobalt, nickel and manganese. We now expect EV/PHEV (electric vehicle/plug-in hybrid electric vehicle) sales to reach 5.0% of global sales (5.55M units) by 2022, from 1.0% (1.26m units) in 2016. This is a relatively conservative estimate compared with some others in the market but still represents a sales CAGR of 34.5% between 2017 and 2022.
- The major implication of this work is a price outlook upgrade for some of the key battery metals, particularly lithium, cobalt and nickel. The biggest revisions are in the long term: we increased our long-term price for lithium from $7,000/t to $9,000/t, cobalt from $16.5/lb to $26/lb and nickel from $13,000/t to $17,500/t. Aside from these, the most significant base metals price forecast changes were upside for aluminium, its raw material alumina, and copper. Zinc, lead and tin have kept in line with expectations. In the bulk space, the largest price revision is for manganese ore, which has held up better than expected despite a swift supply response from South Africa.

Latest news

- A push by Australian **met coal** producers to make up for the lost tonnages due to Cyclone Debbie has resulted in a record fourth consecutive month for shipments out of Queensland in September. According to IHS, coal exports from Queensland totalled ~20Mt in September, up 6% from ~18.9Mt exported in August. The strong performance of recent months has helped in making up for some of the YoY loss in volumes, although at the end of September, total shipments remained down 6% YoY. HCC prices have eased recently, declining ~12% over the past 30 days.
- Mysteel reports that 14 **steel** mills in Hebei's Wu'an city have been ordered to cut production to 50% of their BF capacity from October 7 to tackle air pollution in the area. Related steelmaking equipment, such as sintering plants and pelletizing shaft furnaces, will also suspend production in accordance with these relevant regulations.
- Bloomberg reported over the weekend that the DR Congo has ordered Sinohydro and China Railway Corp to stop exporting intermediate copper and cobalt, mainly **copper** concentrate and **cobalt** hydroxide from its "MKM" Kalumbwe & Myunga asset.
- Indonesia's mining ministry has said that PTFI's special mining permit for the Grasberg **copper-gold** mine, which was set to expire this month, has been extended for another three months. The usual habit has been to issue another six-month document, and so this shorter leash may signal some impatience. After an agreement in principle for the Indonesian government to accede to 51% of the mine was announced in August, talks have seemed to stall, reportedly as both sides wrangle on a valuation estimate for the stake. The mining minister said today that he estimates PTFI to be worth $8bn.

Price forecast changes: EV metals have bright futures – as long as mines don't overreact

- Electric vehicles (EVs) promise – or threaten – major changes to commodity demand and prices. As we wrote recently, we have upgraded our EV sales projections and enhanced our assumption around battery mix and size to deliver updated demand forecasts for lithium, cobalt, nickel and manganese.
- We now expect EV/PHEV (electric vehicle/plug-in hybrid electric vehicle) sales to reach 5.0% of global sales (5.55M units) by 2022, from 1.0% (1.26M units) in 2016. This is a relatively conservative estimate compared with some others in the market but still represents a sales CAGR of 34.5% between 2017 and 2022.
- The major implication of this work is a price outlook upgrade for some of the key **battery metals**, including lithium, cobalt and nickel. The biggest price revisions are in the long term: we increased our long-term price for lithium from \$7,000/t to \$9,000/t, cobalt from \$16.5/lb to \$26/lb and nickel from \$13,000/t to \$17,500/t.
- Aside from these, the biggest **base metals** price forecast changes were for aluminium, its raw material alumina, and copper. Zinc, lead and tin have kept in line with expectations. In the bulk space, the most significant revision is for manganese ore, which has held up better than expected to a swift supply response from South Africa.
- Among the **bulks**, after manganese ore, thermal coal has the largest nearby upgrades on a stronger RMB, low utility stocks and ongoing logistics bottlenecks in China. However, our key thesis of winter downside as the NDRC moves to increase domestic coal output during the winter remains intact, and we still expect a sharp correction in domestic prices in the near term. Finally, we also increased our 2019 iron ore price forecast from \$50/t to \$55/t but maintain our fundamental view that a fall in the mid-50s is required in the next couple of years to clear a cumulative surplus of ~120Mt.

Fig 1 New Macquarie metals and bulk commodity price forecasts

	Unit	2016 CY	2017 CY	2018 CY	2019 CY	2020 CY	2021 CY	2022 CY	LT $2017	2017 Q3	2017 Q4	2018 Q1	2018 Q2
Copper	$/tonne	4,863	6,023	5,900	5,938	6,413	7,188	7,500	5,900	6,349	6,250	6,100	5,900
Aluminium	$/tonne	1,604	1,993	2,038	1,850	1,675	1,800	1,900	1,550	2,012	2,200	2,100	2,000
Zinc	$/tonne	2,092	2,885	3,050	2,575	2,325	2,188	2,188	2,300	2,963	3,200	3,300	3,100
Nickel	$/tonne	9,599	10,131	11,750	13,500	15,000	16,000	17,500	17,500	10,528	10,500	11,000	11,000
Lead	$/tonne	1,871	2,331	2,525	2,163	1,950	1,928	1,928	1,950	2,334	2,550	2,650	2,650
Tin	$/tonne	17,991	20,191	21,375	23,000	21,000	20,500	20,500	18,000	20,566	20,200	20,500	21,000
Manganese ore	$/mtu CIF	4.6	5.9	4.5	4.2	4.2	4.2	4.2	3.0	6.2	6.0	4.5	4.5
FeCr (EU contract)	c/lb	96	142	144	140	130	133	133	110	110	139	145	140
Molybdenum oxide	$/lb	6.5	8.1	8.5	8.5	8.8	9.0	9.5	9.0	8.2	8.5	8.5	8.5
Cobalt (99.8%)	$/lb	12	27	27	20	22	32	41	26	29	30	30	28
Lithium carbonate - CIF China	$/tonne	8,406	11,496	9,000	7,688	8,313	9,750	12,500	9,000	11,655	11,500	10,500	9,000
Alumina	$/t FOB	254	330	313	280	265	260	260	240	334	350	330	310
Steel - Average HRC	$/tonne	451	575	485	480	490	490	505	410	593	580	499	520
Steel Scrap - average #1HMS	$/tonne	204	262	221	227	227	243	243	205	309	253	243	217
Iron ore - Australian lump	c/mtu fob	102	114	88	89	90	97	97	101	120	106	103	83
Spot 62% Fe iron ore China	$/t cfr	58	70	54	55	55	60	60	60	71	63	60	53
Thermal coal - Australian Spot	$/t fob	66	85	75	65	65	63	63	48	93	85	78	72
Thermal coal - JFY contract	$/t fob	62	85	85	72	72	70	70	55	85	85	85	85
Hard coking coal	$/t fob	114	206	128	130	135	140	140	125	187	175	130	130
Semi-soft coking coal	$/t fob	85	137	89	91	95	98	98	81	131	123	91	91
LV PCI coal	$/t fob	88	146	96	98	101	105	105	90	140	131	98	98
Coke - China export spot	$/t fob	192	274	190	190	200	200	200	165	300	230	190	190
Gold	$/oz	1,248	1,257	1,350	1,375	1,400	1,388	1,425	1,250	1,278	1,275	1,300	1,325
Silver	$/oz	17.1	17.2	20.0	21.8	22.0	22.8	23.0	18.0	16.8	17.5	18.5	19.5
Platinum	$/oz	986	949	1,063	1,194	1,288	1,300	1,300	1,400	953	925	975	1,050
Palladium	$/oz	612	852	875	875	844	763	713	800	900	925	925	875
Uranium spot	$/lb	26	22	24	27	30	33	33	33	20	22	24	24

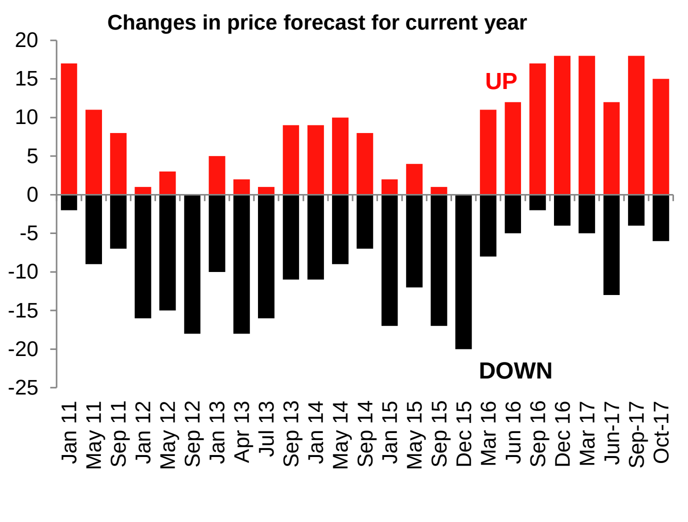
Source: LME, TSI, CRU, Metal Bulletin, Macquarie Research, October 2017

Fig 2 Changes to Macquarie annual price forecasts

	2017 CY	2018 CY	2019 CY	2020 CY	2021 CY	2022 CY	LT $2017
Copper	1.3%	2.2%	0.2%	5.1%	9.3%	7.1%	-
Aluminium	1.2%	5.2%	7.2%	3.9%	7.5%	4.1%	-
Zinc	1.4%	1.2%	-	-	-	-	-
Nickel	1.8%	10.6%	17.4%	25.0%	18.5%	25.0%	34.6%
Lead	-0.7%	-	-	-	-	-	-
Tin	0.1%	-	-	-	-	-	-
Manganese ore	6.1%	12.5%	-	-	-	-	-
FeCr (EU contract)	3.5%	-	-	-	-	-	-
Molybdenum oxide	2.1%	11.4%	17.2%	16.7%	12.5%	18.8%	12.5%
Cobalt (99.8%)	8.0%	36.3%	21.2%	19.4%	52.4%	95.2%	57.6%
Lithium carbonate - CIF China	13.2%	20.0%	2.5%	3.9%	21.9%	47.1%	28.6%
Alumina	6.8%	8.7%	3.7%	1.0%	-	-	-
Steel - Average HRC	-0.4%	3.1%	-	-	-	-	-
Steel Scrap - average #1HMS	0.6%	-	9.7%	-	-	-	-
Iron ore - Australian fines	-2.2%	-1.0%	10.6%	-1.0%	-0.9%	-1.0%	-
Iron ore - Australian lump	0.0%	-0.5%	6.4%	-2.0%	-2.7%	-2.8%	-
Spot 62% Fe iron ore China	-1.4%	-	10.0%	-	-	-	-
Thermal coal - Australian Spot	3.3%	11.9%	-	-	-	-	-
Thermal coal - JFY contract	-	6.3%	-	-	-	-	-
Hard coking coal	0.2%	-	-	-	-	-	-
Semi-soft coking coal	0.3%	-	-	-	-	-	-
LV PCI coal	0.3%	-	-	-	-	-	-
Coke - China export spot	5.8%	-	-	-	-	-	-
Gold	-0.2%	-1.8%	-	-	-	-	-
Silver	-2.4%	-4.8%	-	-	-	-	-
Platinum	-1.9%	-6.6%	-5.0%	-	-	-	-
Palladium	3.5%	12.9%	3.7%	0.7%	-	-	-
Uranium spot	-0.6%	-	-	-	-	-	-

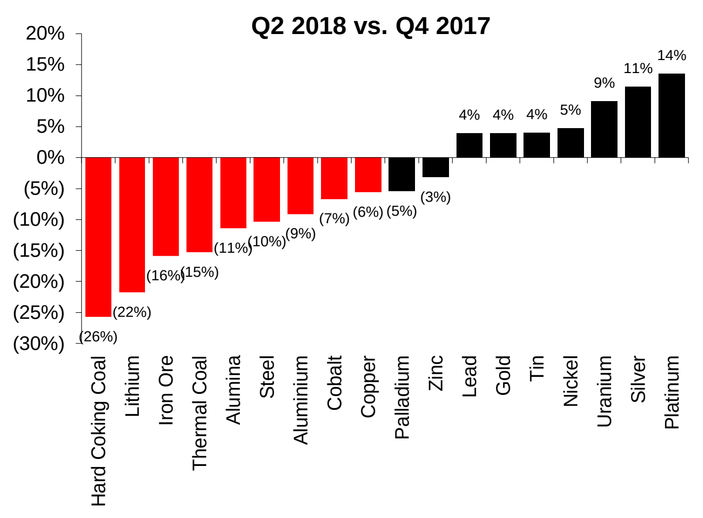
Source: LME, TSI, CRU, Metal Bulletin, Macquarie Research, October 2017

Fig 3 Another round of price increases …



Source: Macquarie Research, October 2017

Fig 4 ... and bulks still seen as strongest shorts on six-month view



Source: LME, TSI, Bloomberg, Macquarie Research, October 2017

Summary of key forecast changes

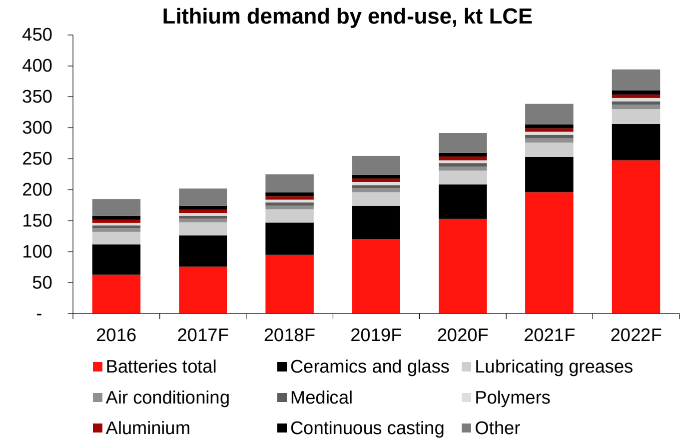
Lithium

- Lithium prices have enjoyed a great run, from $6,000/t in 1Q16 to average almost $12,000/t in 2Q17 (lithium carbonate CIF China basis), surpassing our more bearish expectations and necessitating a severe hike from our $8,000/t forecast in 4Q to $11,500/t, as the unwind we expected on incoming project tonnes has been reluctant to materialise. This optimism, plus some market reports of nearby difficulties in obtaining material, lead us to lift our 2018 expectation by 20% to average $9,000/t.
- However, too much of anything is a bad thing, and the future continues to look bearish for us short–medium term, as too many Australian rock producers are crowding in, progressing new projects and expansions. Some of the news has come in as recently as the last few days (Pilbara Minerals secures Great Wall funding for Phase 2), and so we have raised our estimation of the oversupply to 70–130kt LCE over the years 2018–2020. Given the extremity, our forecasts in 2019/2020 are little changed at $7,500–8,500/t.
- That 27% CAGR (2017–2022) for EV demand does begin to chip away by 2021, however, as battery demand will have increased to just under 200kt (LCE) versus an estimated 63kt in 2016. The changes should begin to push against the oversupply, allowing optimism to return, and prices to rally before the surpluses clear – in our forecast to $9,750/t/$12,500/t average in 2021/2022.
- We also upgrade the long-term price to $9,000/t from $7,000/t, as despite the incoming surplus, we note that it took prices over $10,000/t to attract much of the latest wave of projects, and thus we believe $7,000/t is too low in the longer term given lithium's implied *metal-of-the-future* status.

Cobalt

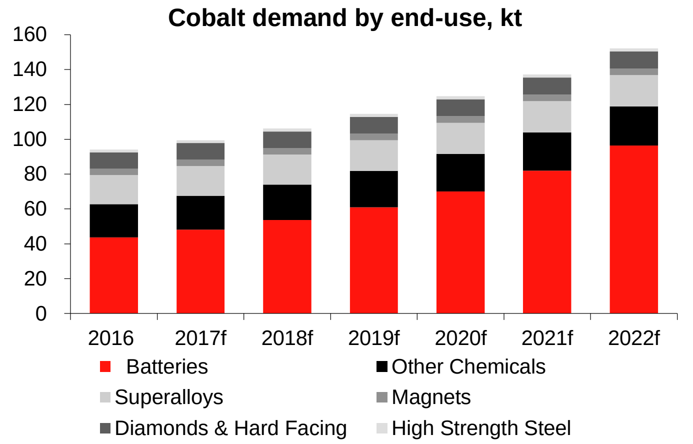
- Cobalt is probably the second great EV story. Although unlike lithium this metal can be thrifted away via the use of alternative battery technologies (eg, NMC 811 instead of 111), the concentration of the supply side, with its 60% of mine output coming from the unpredictable DR Congo, makes this metal an eye catcher. We make major upgrades here to reflect the strong EV demand push, with price up 20–95% over the next few years to reach $41/lb in 2022. By 2022 we see the market in a severe undersupply of >17kt – equivalent to a copper deficit of 3Mt or an aluminium deficit of ~8Mt. At this time we forecast $41/lb cobalt prices as the undersupply combines with the EV demand pace to spark a buying frenzy.
- Nearer term, however, we see DRC mine projects and restarts (ERG, Glencore) coming onstream in the next few years and pushing the market into oversupply in 2019/2020, containing some of the bullishness and allowing prices to drop back to around $20–22/lb.
- We also upgrade long term to $26/lb on the back of concentrated mine supply in central Africa, which remains a politically risky locale. DRC produces 60% of current mined cobalt supply, we calculate, adding to risk at a time of strongly growing demand.

Fig 5 Batteries come to dominate lithium …



Source: Macquarie EV Research, Signumbox, Macquarie Research, October 2017

Fig 6 … and cobalt

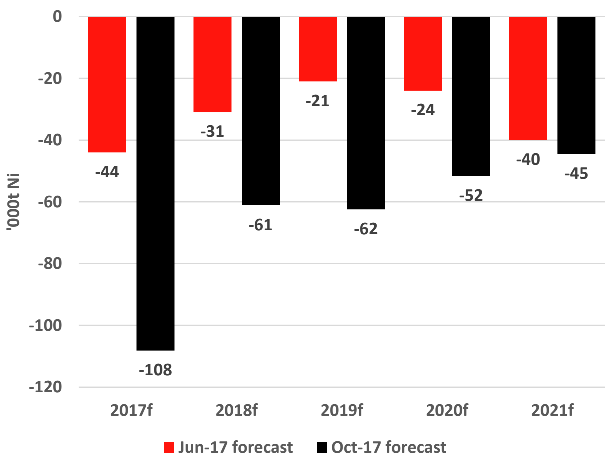


Source: Macquarie EV Research, CDI, October 2017

Nickel

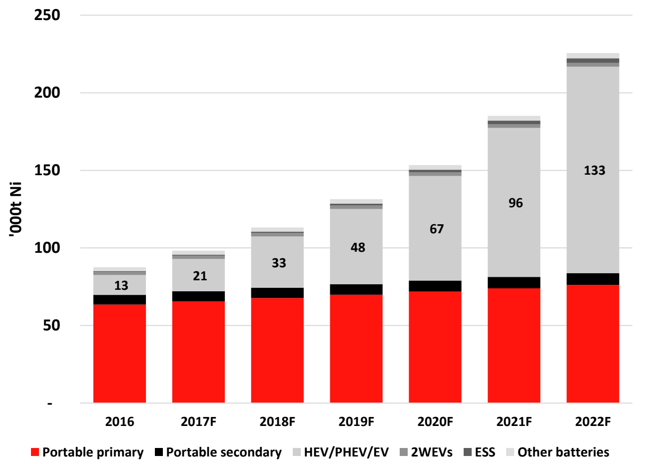
- In each year out to 2022, we now project a larger deficit than previously (Fig 5), which means that the current large overhang of global inventories gets back to “normal” levels quicker than we had previously assumed.
- Major suppliers are indicating that due to ongoing restrictions in availability of sustaining capital due to multiple years of low prices, production targets are unlikely to be met. Vale, for example, recently indicated to the market that it could fall short by 50kt of its previous 2018 production target of 311kt (which was set in December 2016).
- Offsetting this has been the increased availability of nickel ore feed for Chinese nickel producers due to the relaxation of the Indonesian nickel ore ban and also higher-than-expected nickel ore exports from the Philippines (especially Tawi in 2017 and 2018).
- Under our new demand outlook, we believe that the market will need new capacity to be built to meet battery demand after 2023 (LME stocks of briquettes are current large and rising, and this is an ideal feed source for making nickel sulphate for lithium ion battery manufacture). Unlike stainless steel, the ideal feed source for batteries is pure nickel briquettes and powder or intermediate mixed nickel-cobalt hydroxides/sulphides.
- Building this type of capacity requires an incentive price of $15–20,000/t of capacity (if built by Chinese producers in Indonesia or the Philippines). We have raised our long-run price assumption from $13,000/t to $17,500/t to reflect the new reality that nickel pig iron capacity growth in Indonesia cannot meet all demand for the foreseeable future.

Fig 7 Projected global nickel market balance



Source: INSG, Macquarie Research, October 2017

Fig 8 Primary nickel use in batteries



Source: LME, Macquarie Research, October 2017

Base metals: aluminium/alumina upgrades, and copper further out

- Aside from nickel, discussed in the EV section, the biggest base metals price forecast changes were for aluminium, its raw material alumina, and copper. Zinc, lead and tin have kept in line with expectations, and we make few changes (full details on the views for these are in our latest compendium).
- **Aluminium** prices have done better than expected, as the market has reacted very strongly to the first wave of cutbacks in Chinese smelting capacity. Evidently there were more doubters reversing course or getting on board than we suspected. Moreover, Chinese retail investors have been quick to catch on to the news flow, and so with aluminium trading around $2,100–2,200/t lately, we have upgraded our 4Q expectation to $2,200/t and 1Q18 to $2,100/t. From here this is obviously flat, as we believe that a lot of the work has already been done – prices may see some spikes as the initial winter shutdown news hits the market, but we believe this will be softened later in the season by the significant stockpiling that has gone on ahead of the cuts.
- Further out, for aluminium we have raised our forecasts 4–8% as the tighter environment not just for aluminium, but also its important consumables carbon anode and alumina, mean a higher cost base and more robust markets.

- **Alumina** has been upgraded 6.8% and 8.7% in 2017 and 2018, respectively, as a squeeze by Chinese traders has been driven by expectations around the forthcoming winter cuts. The decision by Henan authorities to close the Chalco Zhongzhou refinery two months certainly contributed, but with our average forecast of $350/t (FOB Australia) for 4Q, we are calling for downside from here.
- We believe the fact that bauxite refuses to rally also, despite the apparent reason for some of the alumina upside being the Shanxi bauxite mine inspections, makes this run fragile, and with alumina the one commodity that is seeing substantial ex-China capacity additions over the years, this party has to end.
- Finally **copper** has been upgraded near term and later in the forecast to reflect a better macro environment nearby and the yawning deficit opening up from 2021. In the middle we retain the view of a difficult period characterised by a bit too much cathode – which coming off years of a bit too much cathode should be enough to suppress prices back below $6,000/t. In the new decade, however, things improve, with the lack of mine project development leading to prices moving back above $7,000/t and beyond.

Bulk price changes: up nearby, but same trajectory

- The most significant revision in the bulks space is for **manganese ore**, which has held up better than expected due to a swift supply response from South Africa. Chinese imports have increased ~38%, but v*isible* port inventories remain low, a condition that we expect to support prices this quarter despite steel capacity cuts. We attribute strong Chinese manganese ore imports this year to a collapse in domestic manganese ore production, a structural shift that will support seaborne demand going forward. With two of the largest mines in Australia on their way at a time of slowing crude steel production in China, we still expect a price correction next year, but stronger import demand from China means that more marginal trucked tonnes from South Africa will be required to balance the market. As a result, we revised up our 2018 price forecast 11% to $4.5/dmtu (44%Mn, CIF China).
- After manganese ore, **thermal coal** has the largest nearby upgrades on a stronger RMB, low utility stocks and ongoing logistics bottlenecks in China. Our key thesis of winter downside as the NDRC moves to increase domestic coal output during the winter remains intact, and we still expect a sharp correction in domestic prices in the near term. However, we acknowledge that port and rail constraints may slow down the recovery in domestic supply and allow the price to settle towards the upper end of the government’s range of RMB535–570/t. Combined with a slightly stronger RMB, this has led us to nudge up our 2017 4Q forecast 6% to $85/t and our 2018 price 11% to $75/t FOB Newcastle.
- Finally, we have upgraded our 2019 price forecast for **iron ore** to reflect a smaller deficit following a more cautious view on Vale’s supply growth. The S11D ramp-up has been an operational success, but higher premiums rise the risk of supply cuts in the Southern and South-eastern System. We increased our 2019 forecast from $50/t to $55/t but maintain our fundamental view that a fall in the mid-50s is required in the next couple of years to clear a cumulative surplus of ~120Mt.

Gold/silver: **same old problems into year-end but long-term bright**

- We make a reduction to our near-term **gold** and **silver** forecasts. On gold we were too bearish in 3Q, expecting the price to sell off as the Fed stuck to its plans to raise rates. But it seems we were only too early, with 4Q seeing this now perennial problem for gold. Furthermore our US economist, David Doyle, has upgraded his expectations further out – from one rate hike in 2018 to three. Rate-hike cycles have not historically been bearish gold, but the difference between the markets’ expectations and ours is too large to ignore. It is important to stress, however, we are not bearish: the dollar is still set to decline over the next few years, and elevated geopolitical risks provide a strong base of support.

PGMs: palladium's premium over platinum shouldn't last, but external factors the driver

- In the PGMs, we have again reduced our **platinum** price expectations. The rally we had been calling for from July did happen, but when it came it was so unconvincing, mainly based on a higher gold price, it might have been better if it had not happened at all. When gold lost steam it was exposed for what it was. A number of bullish factors we had cited – such as strong Chinese imports – have faded, and our expectations of a stabilisation of the European diesel share look to be premature. We continue to believe – absent a sharp decline in the rand – that platinum's worst days are behind it, and our gold and FX forecasts imply decent gains in 2018/2019. A better world economy should help platinum jewellery demand, while the Chinese diesel sector offers some respite from the European negativity. But platinum simply isn't in short supply at present.
- Whereas **palladium** is. We still can't quite believe it should be worth more than platinum, and we don't think it will be for long. But the internal forces that would bring this about are currently quite weak – gasoline engines continue to gain market share vs diesel, and substitution of platinum, while now making more sense than the reverse, is not an immediate thing. So while palladium is still set to fall back over 2018, that will be largely on external factors – weaker US and Chinese car sales – and that process has been delayed by the stronger-for-longer world economy we now see. Adding to this, investor sales have dried up. This matters as the market is in deficit, and we had expected investors, scared by the prospect of EVs, to fund it. That EVs haven't scared them is perhaps understandable given limited volumes so far, but the deficit still needs funding, and a higher price for longer is the result.
- Finally, we should mention **rhodium**. In the last ten years this third PGM has traded at $10,000/oz, and $625/oz. The latter was only a year ago. It is now around $1,200/oz, and our assumption is that the higher palladium price has seen some substitution go its way. Thus, we believe it will remain (relatively) strong while palladium remains strong – it offers relatively straightforward cost savings to autocatalyst makers – and up our forecast over the short- and medium-term. Ultimately, however, it is even more exposed to the EV story than palladium.

Monday 09 October 2017

Prices

	Closing price * 09-Oct-17 US$/tonne	Closing price * 09-Oct-17 US¢/lb	Closing price * 06-Oct-17 US$/tonne	Closing price * 06-Oct-17 US¢/lb	% ch. day on day	2017 YTD US$/tonne	Ave 2016 US$/tonne
LME Cash							
Aluminium	2,150	98	2,131	97	0.9	1,930	1,605
Aluminium Alloy	1,825	83	1,824	83	0.1	1,673	1,555
NAASAC	1,934	88	1,935	88	-0.1	1,844	1,704
Copper	6,615	300	6,617	300	0.0	5,969	4,863
Lead	2,497	113	2,517	114	-0.8	2,268	1,872
Nickel	10,930	496	10,515	477	3.9	10,037	9,609
Tin	20,883	947	20,660	937	1.1	20,216	18,006
Zinc	3,302	150	3,298	150	0.1	2,799	2,095
Cobalt	59,291	2,689	58,533	2,655	1.3	53,230	25,655
Molybdenum	15,634	709	15,638	709	0.0	15,874	14,453
LME 3 Month							
Aluminium	2,174	99	2,153	98	1.0	1,940	1,610
Aluminium Alloy	1,840	83	1,835	83	0.3	1,684	1,577
NAASAC	1,950	88	1,950	88	0.0	1,867	1,725
Copper	6,666	302	6,667	302	0.0	5,996	4,867
Lead	2,512	114	2,533	115	-0.8	2,279	1,878
Nickel	11,015	500	10,600	481	3.9	10,094	9,657
Tin	20,770	942	20,550	932	1.1	20,113	17,912
Zinc	3,233	147	3,235	147	-0.1	2,805	2,102
Cobalt	59,000	2,676	58,250	2,642	1.3	53,055	25,758
Molybdenum	15,750	714	15,750	714	0.0	15,871	14,472

**** LME 2nd ring price - 1700 hrs London time. Year-to-date averages calculated from official fixes.***

	09-Oct-17	06-Oct-17	% ch. day on day	2017 YTD	Ave 2016
Gold - *LBMA Gold Price (US$/oz)*	1,279	1,262	1.3	1,252	1,249
Silver - *LBMA Silver Price (US$/oz)*	16.92	16.63	1.8	17.13	17.14
Platinum - *London 3pm price (US$/oz)*	913	913	0.0	956	987
Palladium - *London 3pm price (US$/oz)*	921	921	0.0	831	613
Oil WTI - *NYMEX latest (US$/bbl)*	49.61	49.30	0.6	49.37	43.24
EUR : USD exchange rate - *latest*	1.176	1.173	0.3	1.116	1.107
AUD : USD exchange rate - *latest*	0.777	0.777	0.0	0.767	0.745

Exchange Stocks

(tonnes)	09-Oct-17	06-Oct-17	Change since last report Volume	Change since last report Percent	Cancelled warrants	End-16 stocks	Ch. since end-16
LME Aluminium	1,242,450	1,246,875	-4,425	-0.4%	239,550	2,202,175	-959,725
Shanghai Aluminium	562,911	562,911	0	0.0%	0	100,722	462,189
Total Aluminium	**1,805,361**	**1,809,786**	**-4,425**	**-0.2%**	**239,550**	**2,302,897**	**-497,536**
LME Copper	291,000	293,450	-2,450	-0.8%	67,800	311,825	-20,825
Comex Copper	181,379	180,964	415	0.2%	-	80,112	101,267
Shanghai Copper	103,151	103,151	0	0.0%	-	146,598	-43,447
Total Copper	**575,530**	**577,565**	**-2,035**	**-0.4%**	**67,800**	**538,535**	**36,995**
LME Zinc	258,575	250,700	7,875	3.1%	135,850	427,850	-169,275
Shanghai Zinc	64,515	64,515	0	0.0%	-	152,824	-88,309
Total Zinc	**323,090**	**315,215**	**7,875**	**2.5%**	**135,850**	**580,674**	**-257,584**
LME Lead	154,875	155,125	-250	-0.2%	54,375	194,900	-40,025
Shanghai Lead	14,161	14,161	0	0.0%	-	28,726	-14,565
Total Lead	**169,036**	**169,286**	**-250**	**-0.1%**	**54,375**	**223,626**	**-54,590**
Aluminium Alloy	11,920	11,920	0	0.0%	0	12,980	-1,060
NASAAC	174,980	175,000	-20	0.0%	360	97,380	77,600
Nickel	384,864	386,502	-1,638	-0.4%	135,528	372,066	12,798
Tin	1,970	1,970	0	0.0%	195	3,750	-1,780

Source: CME, LBMA, LME, Reuters, SHFE, Macquarie Research

Important disclosures:

Recommendation definitions

Macquarie - Australia/New Zealand
Outperform – return >3% in excess of benchmark return
Neutral – return within 3% of benchmark return
Underperform – return >3% below benchmark return

Benchmark return is determined by long term nominal GDP growth plus 12 month forward market dividend yield

Macquarie – Asia/Europe
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie – South Africa
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie - Canada
Outperform – return >5% in excess of benchmark return
Neutral – return within 5% of benchmark return
Underperform – return >5% below benchmark return

Macquarie - USA
Outperform (Buy) – return >5% in excess of Russell 3000 index return
Neutral (Hold) – return within 5% of Russell 3000 index return
Underperform (Sell)– return >5% below Russell 3000 index return

Volatility index definition*

This is calculated from the volatility of historical price movements.

Very high–highest risk – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.

High – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.

Medium – stock should be expected to move up or down at least 30–40% in a year.

Low–medium – stock should be expected to move up or down at least 25–30% in a year.

Low – stock should be expected to move up or down at least 15–25% in a year.
* Applicable to Asia/Australian/NZ/Canada stocks only

Recommendations – 12 months
Note: Quant recommendations may differ from Fundamental Analyst recommendations

Financial definitions

All "Adjusted" data items have had the following adjustments made:
Added back: goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense
Excluded: non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

EPS = adjusted net profit / efpowa*
ROA = adjusted ebit / average total assets
ROA Banks/Insurance = adjusted net profit /average total assets
ROE = adjusted net profit / average shareholders funds
Gross cashflow = adjusted net profit + depreciation
*equivalent fully paid ordinary weighted average number of shares

All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).

Recommendation proportions – For quarter ending 30 September 2017

	AU/NZ	Asia	RSA	USA	CA	EUR	
Outperform	50.38%	56.22%	40.70%	46.21%	63.85%	41.61%	(for global coverage by Macquarie, 4.18% of stocks followed are investment banking clients)
Neutral	37.50%	28.16%	43.02%	47.52%	30.00%	39.51%	(for global coverage by Macquarie, 2.68% of stocks followed are investment banking clients)
Underperform	12.12%	15.62%	16.28%	6.27%	6.15%	18.88%	(for global coverage by Macquarie, 1.08% of stocks followed are investment banking clients)

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