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metal&ROCK

Gold's rate-risk, enhanced

One of 2016's bullish gold price drivers has been the dovish handling of the US rate hike cycle, which kicked off in December. But the Jackson Hole event may have flagged a subtle bearish shift.

Janet Yellen's view of the world. Last Friday at Jackson Hole, the US Federal Reserve Chair, Janet Yellen, largely re-iterated her moderately positive take on the US economy: that the impact of a soft business environment and USD-crimped export demand growth is being offset by rising economic activity elsewhere, featuring robust household spending. Indeed, Ms. Yellen believes that net-growth has been sufficient to deliver almost full employment, while inflation remains sub-2%. In coming years, the Fed expects moderate real-GDP growth + tightening of the labour market + inflation lifting above 2%.

Implications for gold. Ms. Yellen delivered nothing new at this event. Her view of the current state of the US economy and its outlook could reasonably be described as balanced – confirmed by the subdued general market response to the event. Her most provocative statement regarding the cash rate itself was that the case for a hike had 'strengthened in recent months' – but any such move would require more economic data, and no time frame was offered. What does this all mean for the gold price? Ms. Yellen's growth statements appear subtly more bullish, more insistent; comments on rate positioning probably less dovish – enhancing the risk of a short-term rate hike. This, in turn, constrains the short-term upside of gold's price (i.e. lifts demand for US\$-assets; reduces demand for non-yielding gold).

2016 performance + outlook. Post-event, gold's price was broadly unchanged at US\$1,319/oz. While it is among the top performers of our coverage (spot's +24%YTD; avg US\$1,250/oz vs. MS 2016e 1,270/oz; LT-forecast \$1,100/oz real) – the price now tests the floor of a 2-month-old \$1,320-1,370/oz range. So are there any price supports here? We recognize two others: 1. China's rapidly expanding gold demand (dominates ETF flows; partly related to perceived risk around large/expanding national debt); 2. rising inflation risk on expanding QE in major economies like the EU and Japan ([Global Metals Playbook: 3Q 2016 - Danger zone, 28-Jun-16](#)).

Equity thoughts. Gold-exposed equities have pulled back this past week, partly anticipating Jackson Hole rate commentary. But they are still outperforming gold's price YTD. Total shareholder returns for precious metal equities are up >100% in 2016, stretching valuations to-or-beyond historical levels. Why the disconnect vs. gold's price? Equities have surged on multiple re-ratings, in our view ([Global Metals & Mining: Gold equities: the big disconnect, 17-Aug-16](#)).

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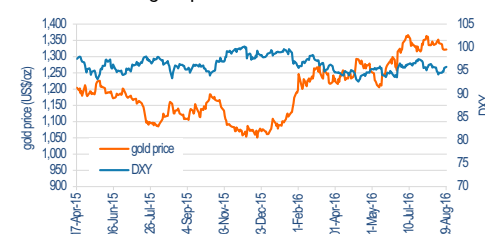
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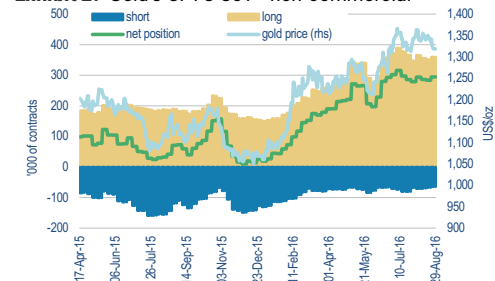
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Exhibit 1: US\$ gold price vs DXY

Source: Bloomberg; US dollar = general global value of USD, based on rates from 500 banks

Exhibit 2: Gold's CFTC CoT - non-commercial

Source: Bloomberg; 1 contract = 100oz

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Week in Review

Base Metals: The complex's price performance was split this past week: Cu-Al-Ni fell 2-5% WoW, as concerns over China's economic growth persisted; Zn-Pb-Sn up mainly on news of underperforming mine supply.

Precious Metals: Despite the media focus on the Jackson Hole event, lack of new US Fed direction on its rate policy did little for precious metals, prices slipping WoW. Investors now await Sep FOMC meeting.

Bulks: Seaborne iron ore prices eased WoW, as steel mills withdrew on the recent price surge. China's struggling local met-coal supply has seen all product prices jump 10-15%WoW; top-grade NEWC/RB thermal coal prices drifted lower WoW; Indo coal prices are up on weak supply growth.

Exhibit 3: Price performance

Metals	Latest	08/19 - 08/26	MTD	QTD	YTD
Base Metals					
Aluminum (LME Cash)	1,631	-1.4%	-0.3%	-0.7%	8.7%
Copper (LME Cash)	4,617	-3.5%	-6.1%	-4.6%	-1.9%
Nickel (LME Cash)	9,792	-5.0%	-7.5%	4.2%	11.5%
Zinc (LME Cash)	2,303	0.7%	2.7%	9.5%	44.6%
Lead (LME Cash)	1,852	-1.0%	2.2%	3.7%	3.1%
Tin (LME Cash)	18,759	0.9%	5.2%	9.9%	28.6%
Precious Metals					
Gold (spot)	1,324	-1.3%	-2.0%	0.2%	24.8%
Silver (spot)	19	-3.4%	-8.3%	-0.4%	34.6%
Platinum (spot)	1,077	-3.3%	-6.2%	5.1%	20.8%
Palladium (spot)	694	-2.4%	-2.2%	15.8%	23.3%
Bulks					
Iron Ore (spot)	61	0.8%	3.5%	10.4%	41.0%
Thermal Coal (spot)	66	-1.2%	2.5%	13.0%	36.4%
Met Coal (spot)	124	7.0%	22.0%	34.6%	58.7%

Source: Bloomberg, Morgan Stanley Research

Morgan Stanley Price Forecasts











































Exhibit 4: Summary of Morgan Stanley's commodity price forecasts (as at 27-Jun-16)

Base Metals	Units	1Q16	2Q16e	3Q16e	4Q16e	1Q17e	2Q17e	3Q17e	4Q17e	2016e	2017e	2018e	2019e	LT
Aluminum	US\$/lb	0.69	0.71	0.70	0.70	0.72	0.74	0.74	0.74	0.70	0.74	0.80	0.80	0.98
Copper	US\$/lb	2.13	2.15	2.05	2.05	2.15	2.15	2.15	2.20	2.09	2.16	2.44	2.70	3.08
Nickel	US\$/lb	3.86	3.99	3.90	3.90	4.20	4.40	4.60	4.80	3.91	4.50	5.78	6.73	8.36
Zinc	US\$/lb	0.76	0.87	0.90	0.85	0.90	1.05	1.05	1.00	0.84	1.00	0.95	0.98	1.06
Lead	US\$/lb	0.79	0.78	0.82	0.82	0.85	0.85	0.85	0.85	0.80	0.85	0.88	0.89	0.92
Precious Metals														
Gold	US\$/oz	1,182	1,256	1,320	1,320	1,300	1,300	1,300	1,300	1,270	1,300	1,250	1,210	1,209
Silver	US\$/oz	14.9	16.7	17.0	17.0	16.8	16.8	16.8	16.8	16.4	16.8	16.4	17.0	20.9
Platinum	US\$/oz	919	1,008	1,025	1,023	1,021	1,026	1,041	1,056	994	1,036	1,078	1,228	1,595
Palladium	US\$/oz	528	569	596	609	619	634	655	691	576	650	780	876	935
Bulks														
Iron ore	US\$/MT	48	56	45	35	42	43	43	41	46	42	51	54	52
Thermal Coal	US\$/MT	53	51	54	54	58	56	56	56	53	57	58	60	65
Coking Coal	US\$/MT	77	92	85	85	80	85	80	80	85	81	97	102	120

Source: Bloomberg, Morgan Stanley Research estimates (e)

Commodity Thermometer

Exhibit 5: Metals & Mining Commodity Thermometer

Rating	Commodity	Bearish	Neutral	Bullish	Thesis
6	Zinc				Exiting big mines + Glencore's controlling large marginal mine supply + weak mine supply growth, all while steel production rates are holding up better than expected, is supportive of the price outlook.
5	Lead				Improved auto production rates for China, the US and Japan this year, together with exiting mines (zinc-related) + lack of scrap, offer medium-term price support.
3	Nickel				Stainless steel producers' reluctance to restock in H1 should see the industry's high-cost laterite miners scale back production or close, rebalancing the trade before 2017's restocking season.
3	Copper				Price's being undermined by subdued property/investor demand in China, but its longer-term outlook continues to be supported by struggling global mine supply growth.
3	Lithium				Emerging demand for electrical vehicles is the latest bull point for metal markets, supporting not only conventional metals like aluminium and copper, but light-weight rechargeable, durable batteries – with lithium at the forefront.
3	PGMs				Platinum's market faces persistent surpluses over coming years, reflecting ballooning scrap; conversely, palladium are on-going deficits that continue to promise price support/upside. Investors are increasingly troubled by looming structural changes to longer-term autocat demand.
3	Thermal Coal				Large, widespread production cuts in China, a lack of projects, and a general recovery in energy prices – are supporting seaborne prices.
3	Gold/Silver				Brand new Brexit risk + US Fed's languishing rate hike cycle + China debt risk + benign inflation environment, all provide a stable base for this metal's price.
2	Steel				Widespread rationalisation and stable steel demand across key regions promises solid medium-term price performance.
2	Uranium				Robust nuclear power generating capacity growth in China and the US, together with Japan's economic need to re-activate its capacity, act together as a potent price driver.
2	Aluminum/alumina				Remarkably, China's 2015 capacity cuts are actually holding. Still, spot/premia worldwide are trading at relative lows, reflecting a balanced but generally subdued trade – bearish for alumina and bauxite demand.
2	Coking Coal				China's imports have recovered this year, at a time when North American exports have collapsed. Australia's exports and cost of production are now determining the trade's prices.
2	Mineral Sands				Titanium feedstock + zircon trades have rebalanced; active property markets of China/US offer stable backdrop, but price outlook flat.
2	Iron Ore				Slowing supply growth outlook + rapid displacement of China's domestic production by imports + stable/flat Asia steel demand growth outlook delivers a flat price forecast.
1	Diamonds				Ongoing surge in rough product, and high inventories, both weigh on the short- to medium-term price outlook.

Source: Morgan Stanley Research

Recent Reports + Upcoming Events

Recent Research	Date
commodity fruitCAKE: Asia's steel raw materials: snapshot	25-Aug-16
metal&ROCK: Rise & rise of zinc	23-Aug-16
Commodity Matters: Iron ore vs. G20	23-Aug-16
Commodity Matters: Copper's disruption allowance, revisited	17-Aug-16
metal&ROCK: Iron ore's late summer haze	15-Aug-16
China Materials: July Data: Elevated Steel Exports Draw Iron Ore Imports	08-Aug-16
metal&ROCK: Ally's inputs - update	08-Aug-16
Commodity Matters: Aussie bulk exports: Jun-16	02-Aug-16
metal&ROCK: The rise of China's steel exports	01-Aug-16
commodity fruitCAKE: The trouble with nickel	28-Jul-16
metal&ROCK: 2016 price check	25-Jul-16
metal&ROCK: What's up with thermal coal?	18-Jul-16
China Materials: June Trade Data Shows Mixed Pictures	14-Jul-16
metal&ROCK: Nickel's new 'Philly-risk'	10-Jul-16
commodity fruitCAKE: universal price rally (& fall)	05-Jul-16
Commodity Matters: Aussie bulk exports: May-16	05-Jul-16
European Metals & Mining: mineSPY	05-Jul-16
metal&ROCK: Capacity cuts fade	04-Jul-16
Global Metals Playbook: 3Q 2016 - Danger zone	27-Jun-16
commodity fruitCAKE: Met-coal 2016Q3 deals done	27-Jun-16
metal&ROCK: Britain leaves. A commodity perspective	27-Jun-16
Asia Pacific Mining and Utilities: Ultra Supercritical Analysis	22-Jun-16
commodity fruitCAKE: (Partial) Base Metals wrap	22-Jun-16
metal&ROCK: EV commodity exposure	20-Jun-16
commodity fruitCAKE: Back to the Futures	16-Jun-16
metal&ROCK: Zinc's price also rises	13-Jun-16
Commodity Matters: There's life in Thermal Coal	09-Jun-16
China Materials: Correction - May trade data: bulk imports marched on	08-Jun-16
Commodity Matters: Copper – treading Blue Water	07-Jun-16
metal&ROCK: Met-coal's divergent prices explained	06-Jun-16
commodity fruitCAKE: Rust – sub-\$50/t again	02-Jun-16
metal&ROCK: Iron ore supply growth, revisited	30-May-16
Metals & Mining: China field trip: a gradual transition still a realistic base case	26-May-16

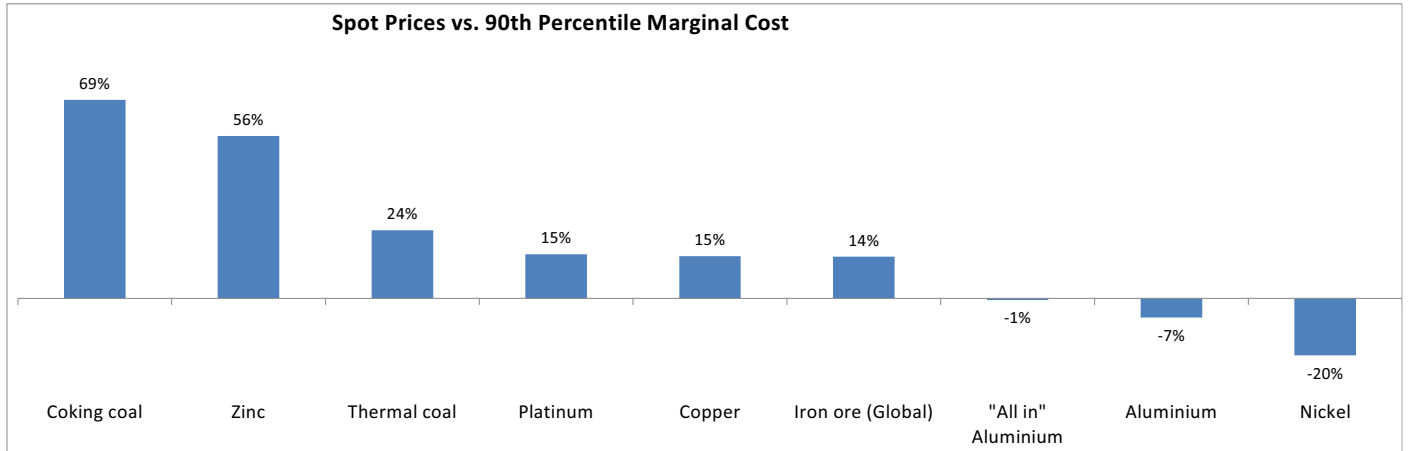
Exhibit 6: Upcoming economic data relevant to Commodities

Date	Event
01-Sep	NBS Manufacturing PMI
01-Sep	Caixin Manufacturing PMI
07-Sep	Foreign Reserves
08-Sep	Trade Balance
08-Sep	Exports YoY

Source: Bloomberg, Morgan Stanley Research

Spot commodity prices vs. marginal costs

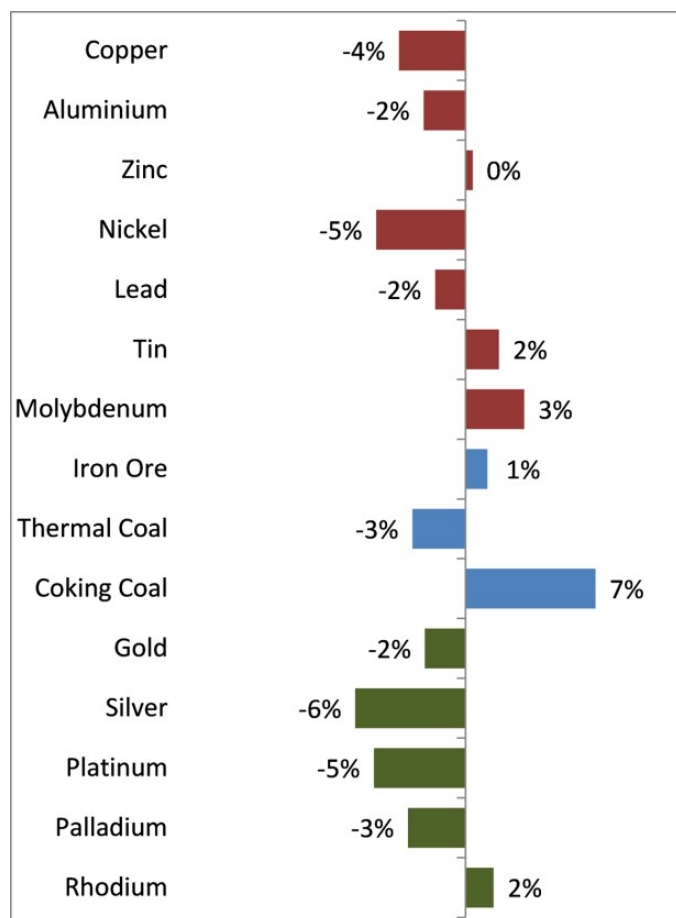
Exhibit 7: Spot commodity prices vs. the marginal cost of production



Source: Wood Mackenzie, Bloomberg, Morgan Stanley Research. Marginal cost (Year 2016); Data set Q2 '16; C1 cash costs. For Coal, the data set is of May, 2016.

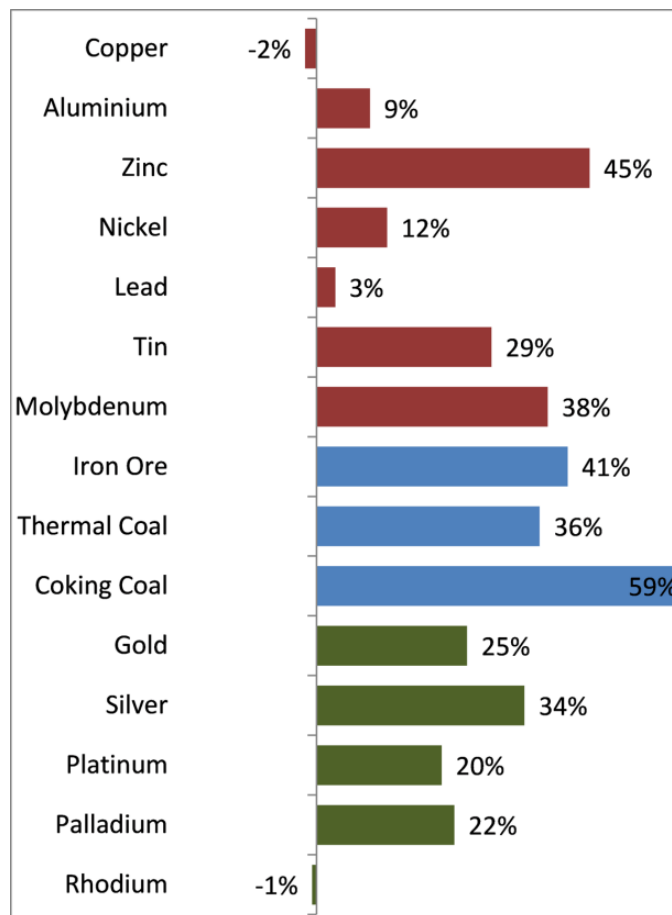
Commodity Price Snapshot

Exhibit 8: Key metals: one-week absolute performance, 18-08-16 to 25-08-16



Source: Bloomberg, Morgan Stanley Research

Exhibit 9: Key metals: YTD absolute performance, through 25-Aug-16



Source: Bloomberg, Morgan Stanley Research

Exhibit 10: Base Metals: price snapshot

Base Metals	25-Aug-16	18-Aug-16	WoW Change (%)
Copper, LME Cash (US\$/lb)	2.09	2.17	-3.7%
Primary Aluminium, LME Cash (US\$/lb)	0.74	0.76	-2.3%
Zinc, LME Cash (US\$/lb)	1.04	1.04	0.4%
Nickel, LME Cash (US\$/lb)	4.44	4.67	-4.9%
Lead, LME Cash (US\$/lb)	0.84	0.85	-1.7%
Tin, LME Cash (US\$/lb)	8.51	8.36	1.8%
Cobalt, LME Cash (US\$/lb)	11.79	12.02	-1.9%

Source: Bloomberg, Morgan Stanley Research

Exhibit 11: Bulks: price snapshot

Bulks	25-Aug-16	18-Aug-16	WoW Change (%)
Iron Ore, 62% CFR Qingdao MB (US\$/t)	61.4	60.7	1.2%
Thermal Coal, API4 Richard Bay Futures (US\$/t)	66.1	68.1	-2.9%
Coking Coal, FOB Australian TSI (US\$/t)	124.1	115.8	7.2%

Source: Bloomberg, Morgan Stanley Research

Exhibit 12: Precious Metals & PGMs: price snapshot

Precious Metals and PGMs	25-Aug-16	18-Aug-16	WoW Change (%)
Gold (US\$/oz)	1,322	1,352	-2.2%
Silver (US\$/oz)	18.55	19.75	-6.1%
Platinum (US\$/oz)	1,074	1,131	-5.1%
Palladium (US\$/oz)	690	712	-3.2%
Rhodium (US\$/oz)	655	645	1.6%

Source: Bloomberg, Morgan Stanley Research

Exhibit 13: Other Metals: price snapshot

Other	25-Aug-16	18-Aug-16	WoW Change (%)
Molybdenum, LME Cash (US\$/lb)	7.3	7.0	3.2%
Vanadium Ore, Pentoxide Min 98% EU (US\$/lb)	3.65	3.35	9.0%
Ferro-Chrome 6-8% C 60% (US\$/lb)	0.81	0.81	0.0%
Uranium UxC-Ux U3O8 Spot (US\$/lb)	26.0	26.1	-0.4%
Ilmenite min. 54% TiO2 (US\$/t)	105	105	0.0%
Rutile min. 95% TiO2 (US\$/t)	635	635	0.0%

Source: Bloomberg, Morgan Stanley Research

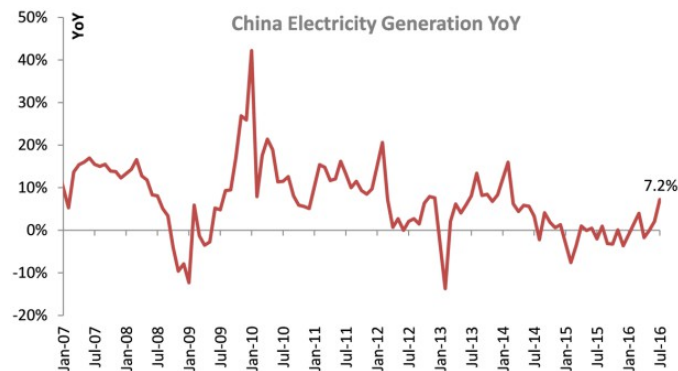
Exhibit 14: Exchange rate snapshot of major metal producing countries

FX Rates of Key Commodity Countries	25-Aug-16	18-Aug-16	WoW Change (%)
1 AUD = USD (Australian \$)	0.76	0.77	-0.9%
1 EUR = USD (Euro)	1.13	1.14	-0.6%
1 USD = BRL (Brazilian Real)	3.23	3.24	-0.1%
1 USD = CAD (Canadian \$)	1.29	1.28	1.1%
1 USD = CLP (Chilean Peso)	663	656	1.1%
1 USD = CNY (Chinese Renmimbi)	6.66	6.63	0.4%
1 USD = KZT (Kazakh Tenge)	339	339	0.0%
1 USD = MXN (Mexican Peso)	18.37	18.19	1.0%
1 USD = NOK (Norwegian Krone)	8.22	8.15	0.8%
1 USD = PEN (Peruvian New Sol)	3.35	3.30	1.3%
1 USD = RUB (Russian Ruble)	65.04	63.62	2.2%
1 USD = SEK (Swedish Krona)	8.41	8.35	0.7%
1 USD = ZAR (S. African Rand)	14.21	13.37	6.3%
1 USD = ZMW (Zambian Kwacha)	9.80	9.90	-1.0%

Source: Bloomberg, Morgan Stanley Research

China's Macro Indicators

Exhibit 15: China's electricity generation



Source: CEIC, Morgan Stanley Research

Exhibit 16: China's Purchasing Managers Index and Industrial Production (IP)



Source: CEIC, Morgan Stanley Research

Exhibit 17: China's M2 money supply



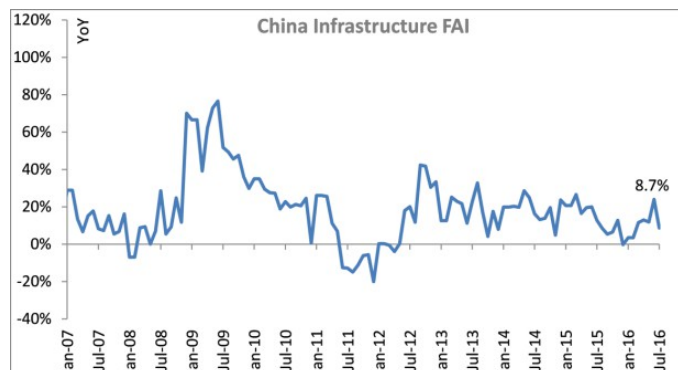
Source: CEIC, Morgan Stanley Research

Exhibit 18: China's machinery sales



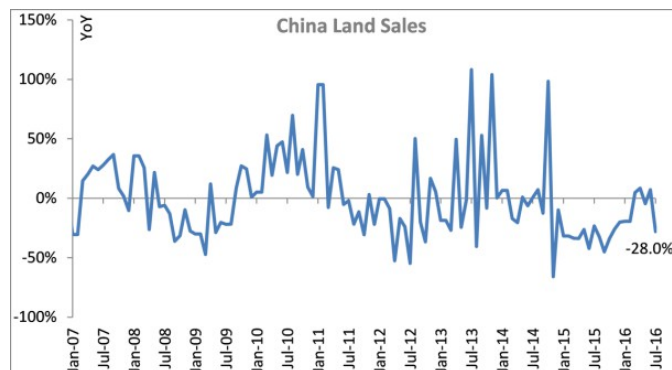
Source: CEIC, Morgan Stanley Research

Exhibit 19: China's Infrastructure Fixed Asset Investments (FAI)



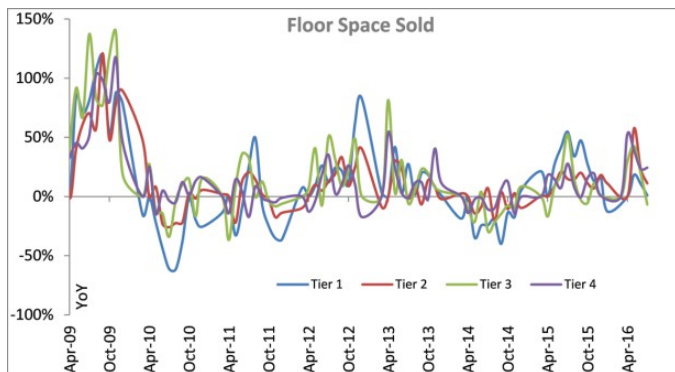
Source: CEIC, Morgan Stanley Research

Exhibit 20: China's land sales



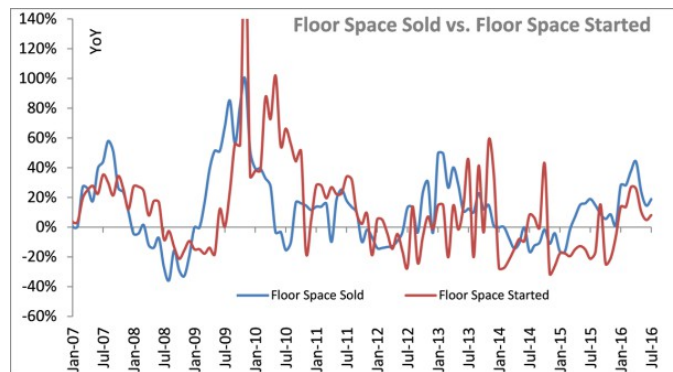
Source: CEIC, Morgan Stanley Research

Exhibit 21: China's floor space sold by Tier-city



Source: CEIC, Morgan Stanley Research

Exhibit 22: China's floor space sold vs floor space started



Source: CEIC, Morgan Stanley Research

Exhibit 23: China's national average property sales



Source: CEIC, Morgan Stanley Research

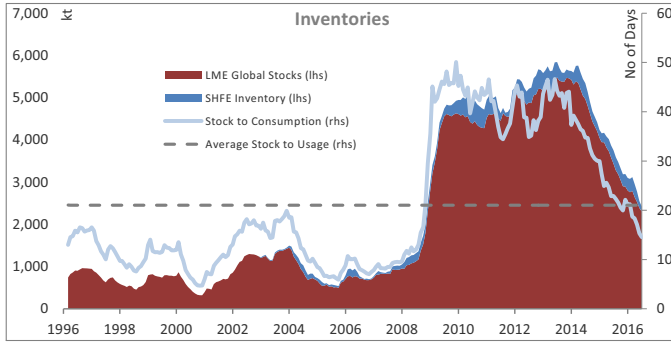
Exhibit 24: MS China Economic Index vs. China IP



Source: Bloomberg, Morgan Stanley Research

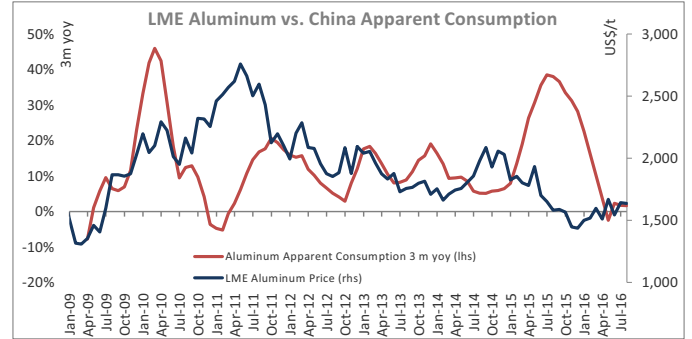
Aluminium

Exhibit 25: Aluminium exchange inventories and days-of-consumption



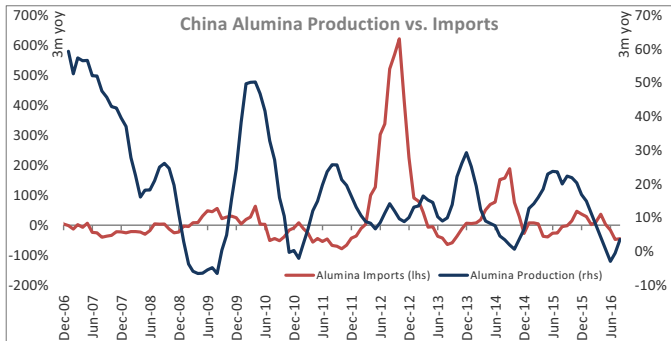
Source: Bloomberg, WBMS, Morgan Stanley Research

Exhibit 26: China's apparent consumption vs. price



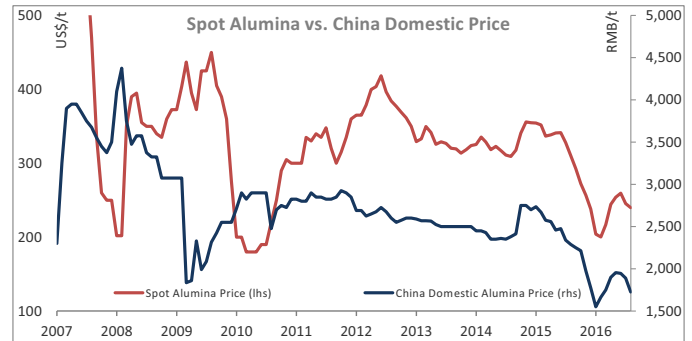
Source: Bloomberg, Morgan Stanley Research

Exhibit 27: Raw Materials: China's alumina production vs. imports



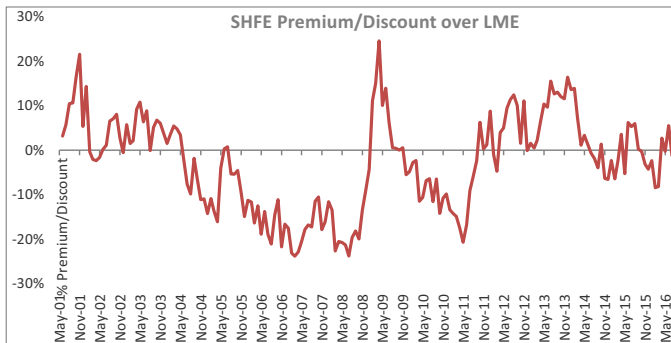
Source: Bloomberg, Morgan Stanley Research

Exhibit 28: Raw Materials: spot alumina vs. China's domestic price



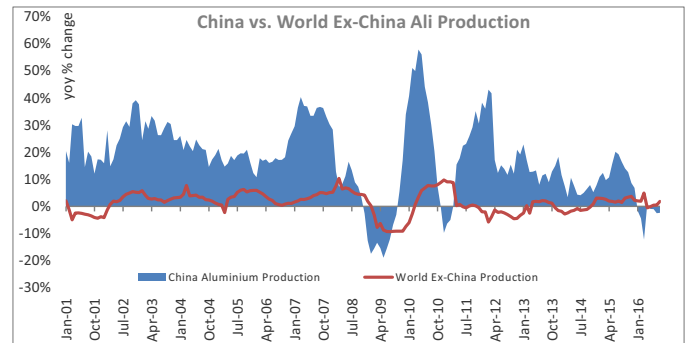
Source: Bloomberg, Morgan Stanley Research

Exhibit 29: Price differentials : SHFE vs. LME



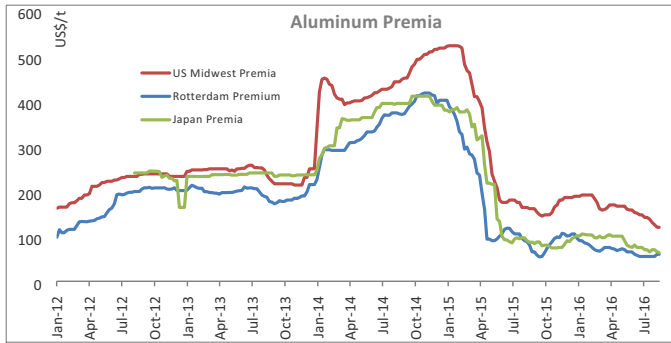
Source: Bloomberg, Morgan Stanley Research

Exhibit 30: Aluminium world production ex-China



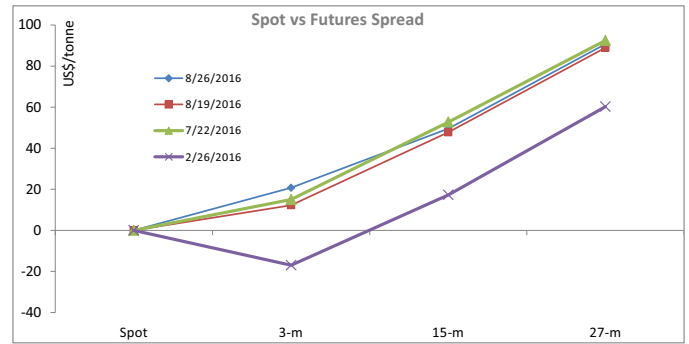
Source: Bloomberg, Morgan Stanley Research

Exhibit 31: Physical demand : aluminum premia, by region



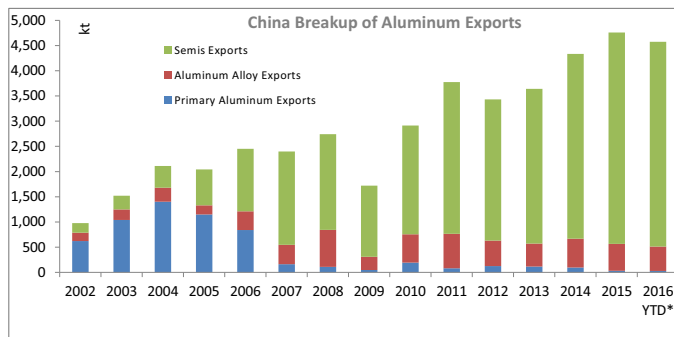
Source: Bloomberg, Morgan Stanley Research

Exhibit 32: Contango vs. Backwardation: aluminium futures curve movement



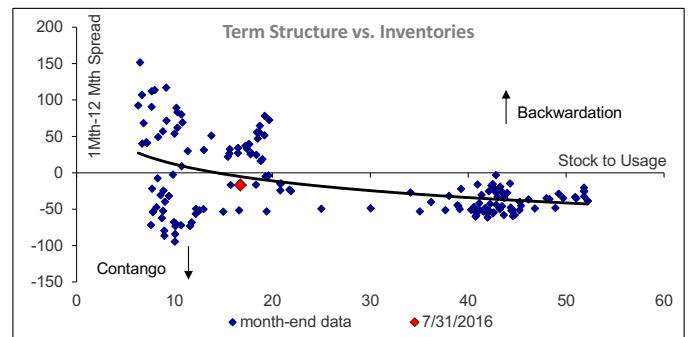
Source: Bloomberg, Morgan Stanley Research

Exhibit 33: China's aluminum exports, by product type



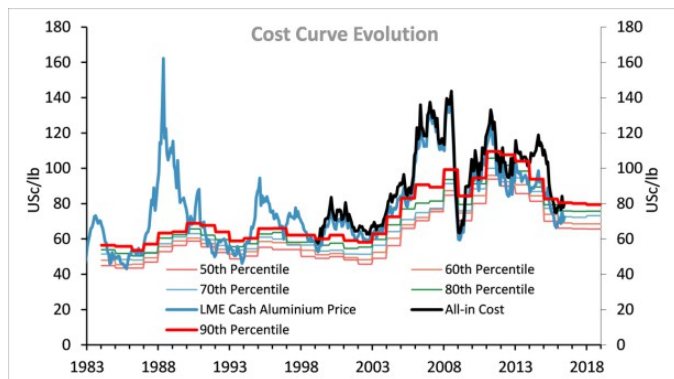
Source: Bloomberg, Morgan Stanley Research

Exhibit 34: Aluminum term structure vs. inventories



Source: Bloomberg, Morgan Stanley Research

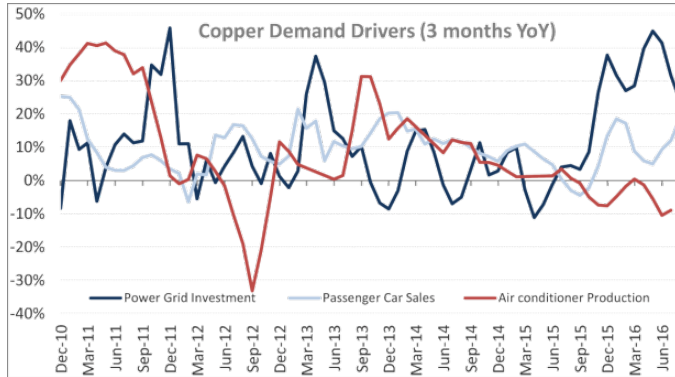
Exhibit 35: Aluminum cost curve evolution



Source: Wood Mackenzie, Morgan Stanley Research

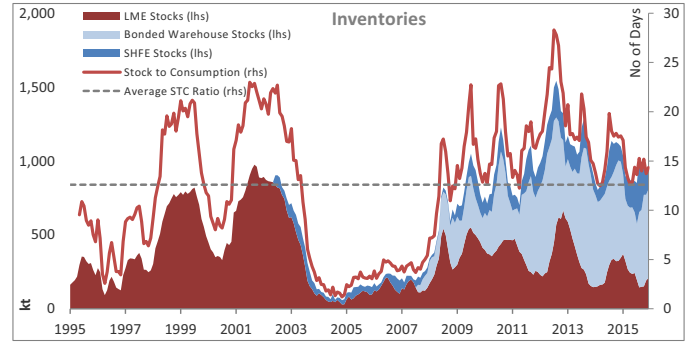
Copper

Exhibit 36: Grid investments, car sales, and air conditioner sales



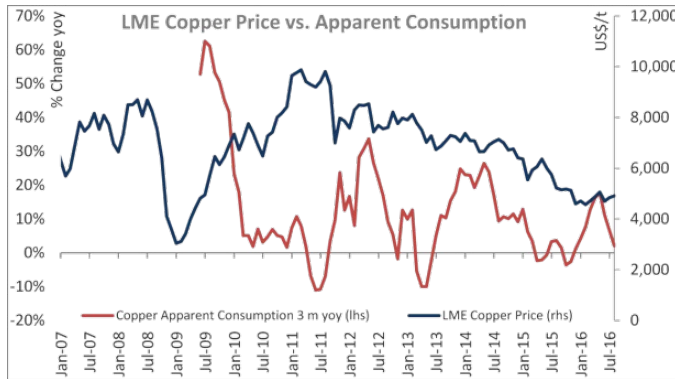
Source: Bloomberg, Morgan Stanley Research

Exhibit 37: Copper exchange and bonded warehouse inventories vs. days-of-consumption



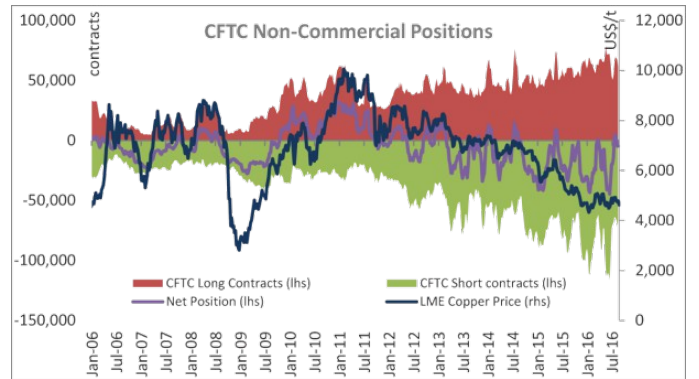
Source: Bloomberg, Morgan Stanley Research

Exhibit 38: China's copper price vs. apparent consumption



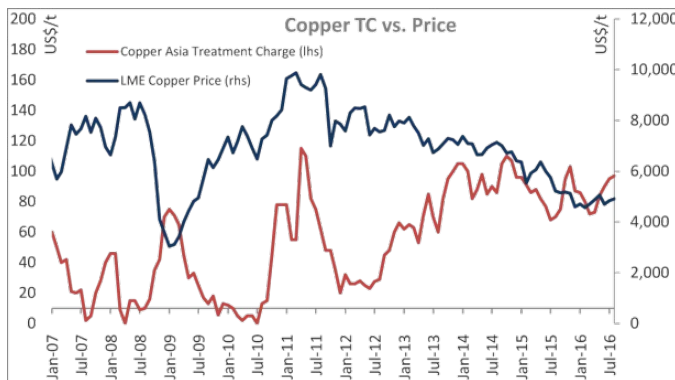
Source: Bloomberg, Morgan Stanley Research, * Apparent Consumption is calculated as refined production less net exports and change in SHFE stocks.

Exhibit 39: CFTC speculative net length



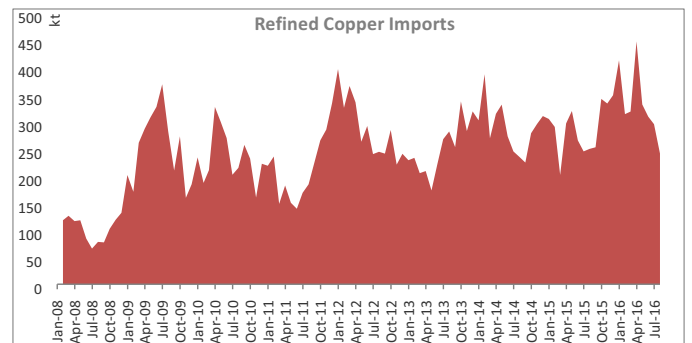
Source: Bloomberg, CFTC, Morgan Stanley Research

Exhibit 40: Copper treatment charges (TCs) vs. price



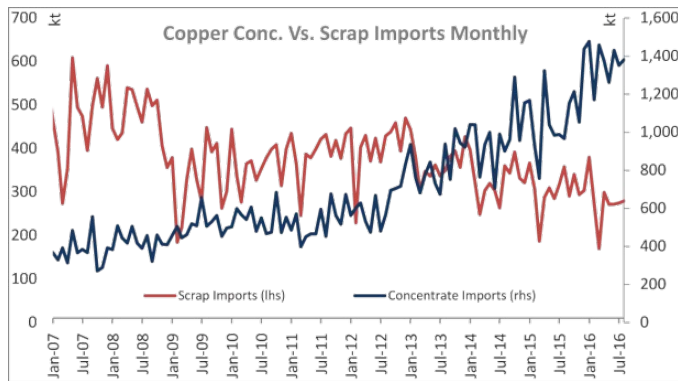
Source: Bloomberg, Wood Mackenzie, Morgan Stanley Research

Exhibit 41: China's refined copper imports



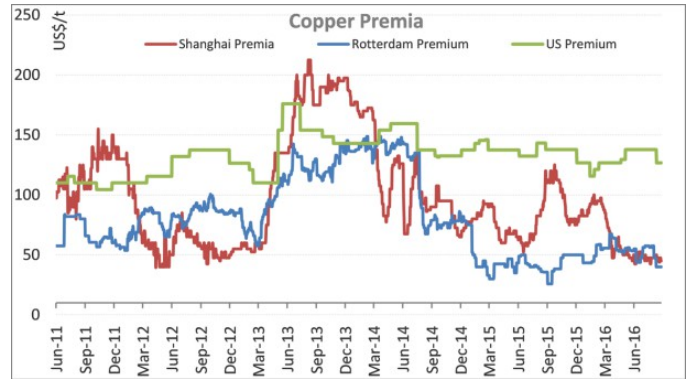
Source: Bloomberg, Wood Mackenzie, Morgan Stanley Research

Exhibit 42: Raw materials: China's copper concentrate and scrap monthly imports



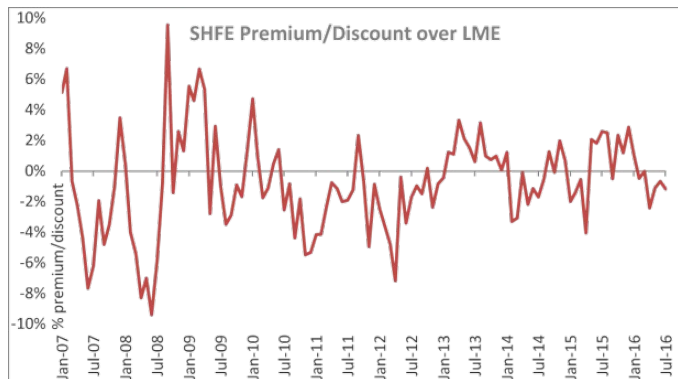
Source: Bloomberg, Morgan Stanley Research

Exhibit 43: Physical demand: copper premia by region



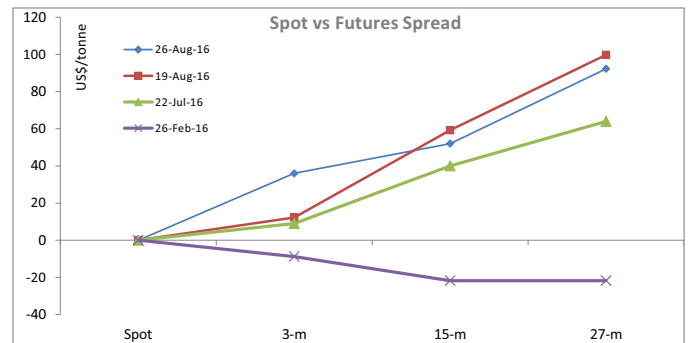
Source: Bloomberg, Morgan Stanley Research

Exhibit 44: Price differentials: SHFE vs. LME



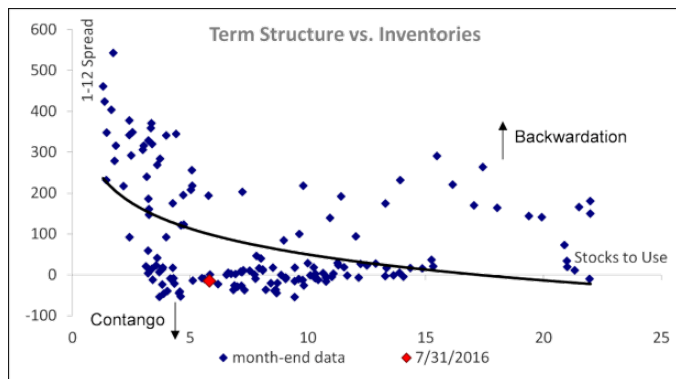
Source: Bloomberg, Morgan Stanley Research

Exhibit 45: Contango vs. Backwardation: copper forward curve



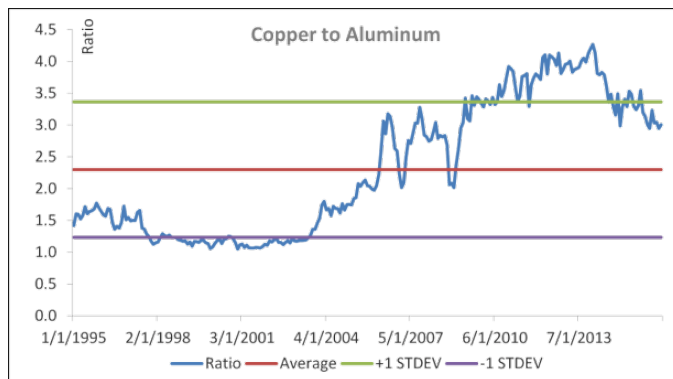
Source: Bloomberg, Morgan Stanley Research

Exhibit 46: Copper term structure vs. inventories



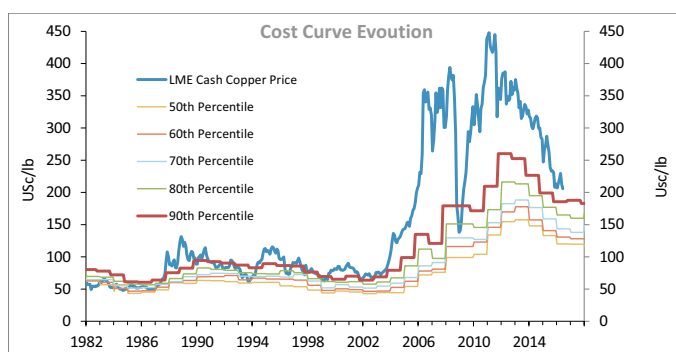
Source: Bloomberg, Morgan Stanley Research

Exhibit 47: Copper to Aluminum ratio



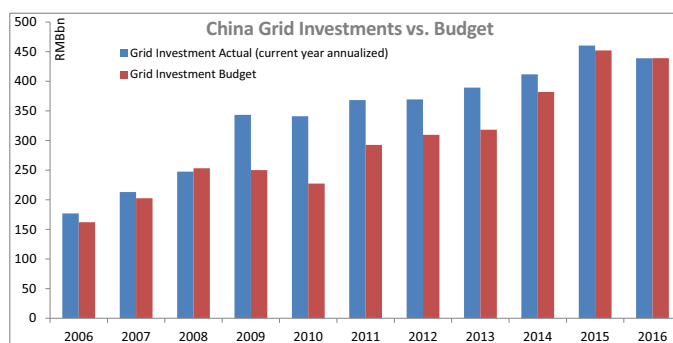
Source: Bloomberg, Morgan Stanley Research

Exhibit 48: Copper cost curve evolution



Source: Wood Mackenzie, Morgan Stanley Research

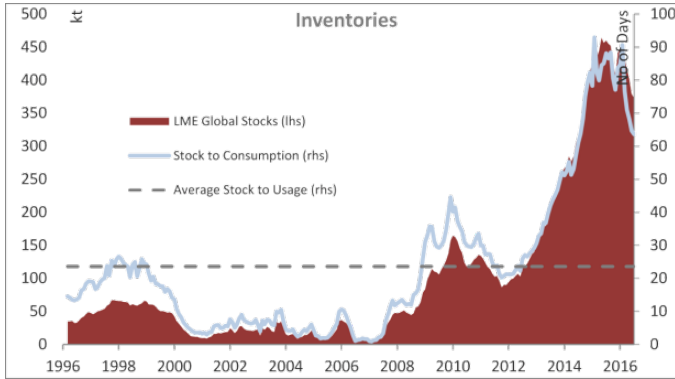
Exhibit 49: China grid Investments (annualized) vs. government spending budget



Source: China State Grid, Bloomberg, Morgan Stanley Research

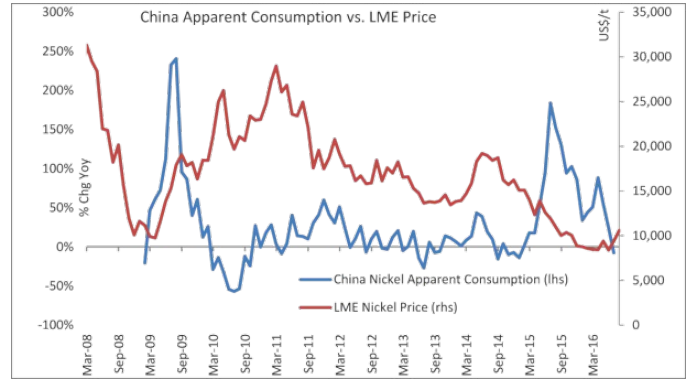
Nickel

Exhibit 50: Nickel exchange inventories and days of consumption



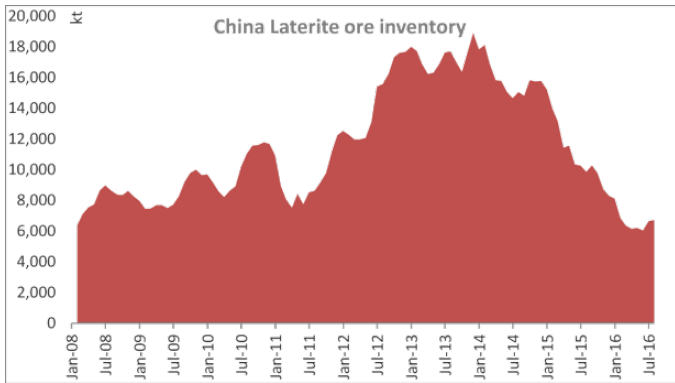
Source: Bloomberg, INSG, Morgan Stanley Research

Exhibit 51: China's apparent nickel consumption vs. LME price



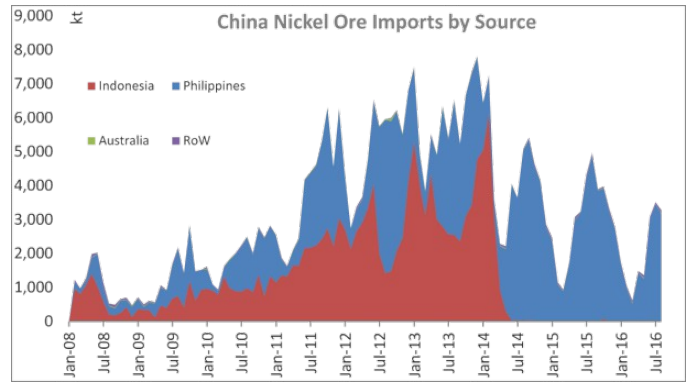
Source: Bloomberg, INSG, Morgan Stanley Research

Exhibit 52: Raw materials: nickel laterite ore inventories



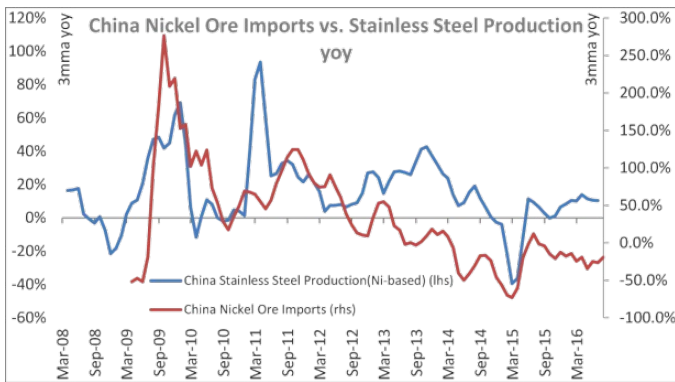
Source: Bloomberg, Morgan Stanley Research

Exhibit 53: Raw materials: China's ore imports by source



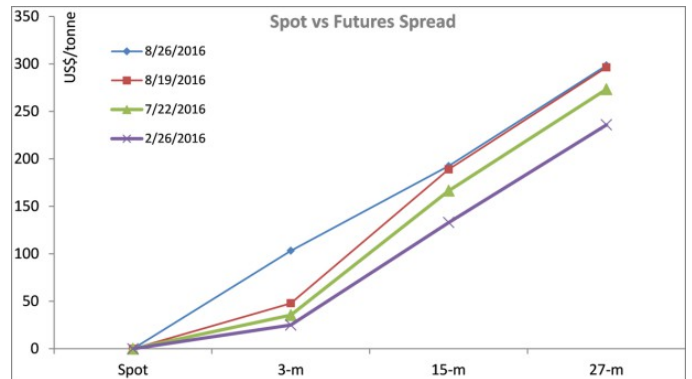
Source: Bloomberg, Morgan Stanley Research

Exhibit 54: China's nickel ore imports vs. stainless steel production



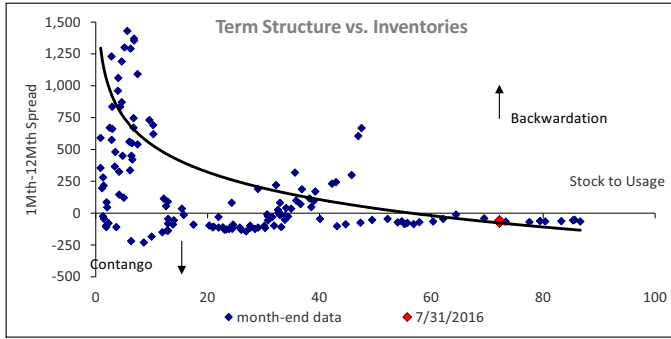
Source: Bloomberg, Morgan Stanley Research

Exhibit 55: Contango vs. Backwardation: nickel futures curve movement



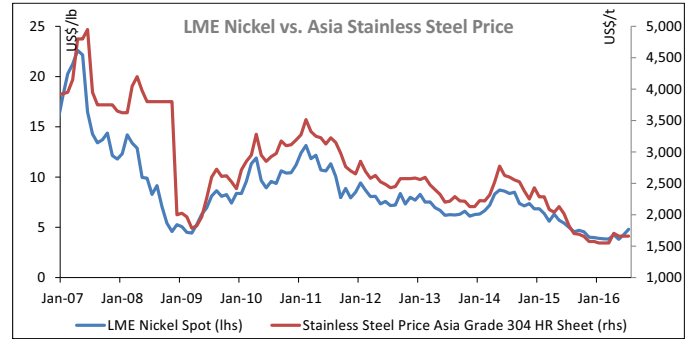
Source: Bloomberg, Morgan Stanley Research

Exhibit 56: Nickel term structure vs. inventories



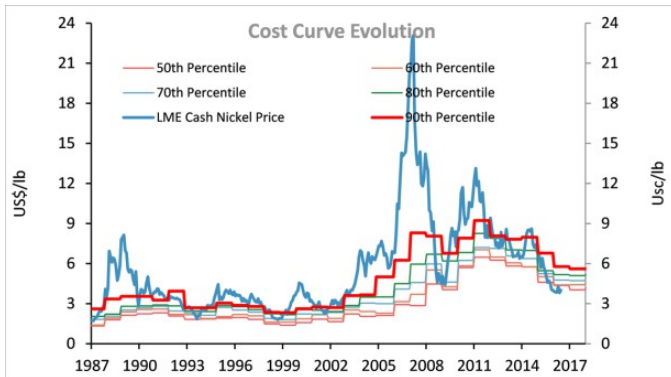
Source: Bloomberg, Morgan Stanley Research

Exhibit 57: LME Nickel vs. Asia stainless steel price



Source: Bloomberg, Morgan Stanley Research

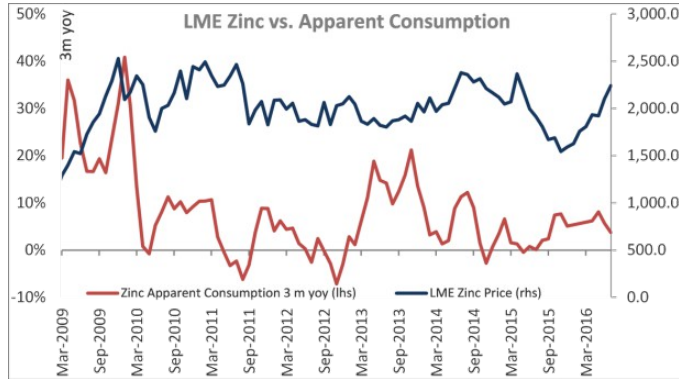
Exhibit 58: Nickel cost curve evolution



Source: Wood Mackenzie, Morgan Stanley Research

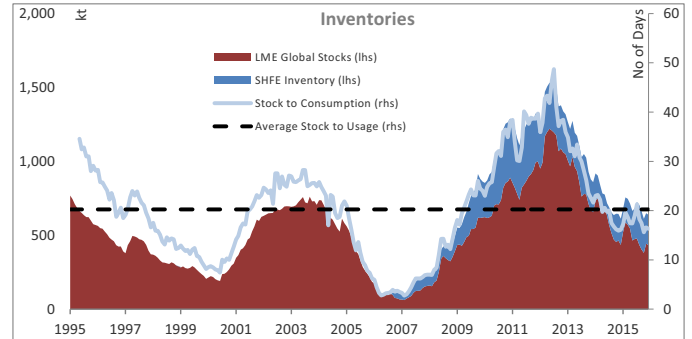
Zinc

Exhibit 59: China's apparent zinc consumption vs. LME price



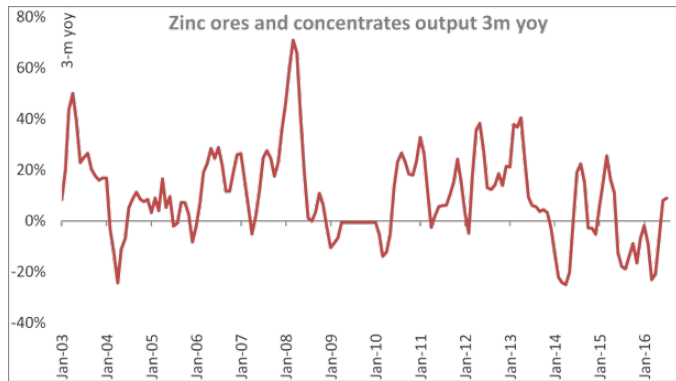
Source: Bloomberg, Morgan Stanley Research

Exhibit 60: Zinc exchange inventories and days-of-consumption



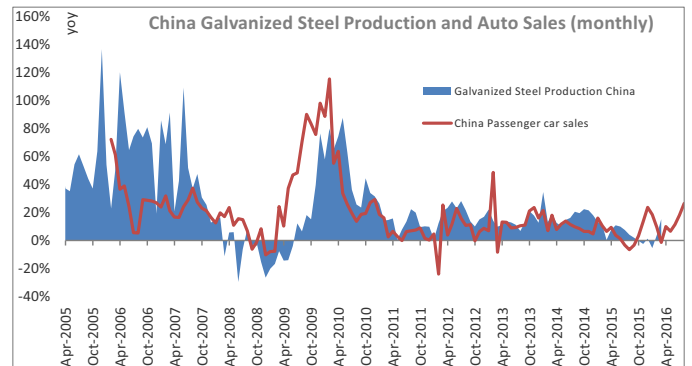
Source: Bloomberg, Morgan Stanley Research

Exhibit 61: Supply drivers: China's zinc ore and concentrate output



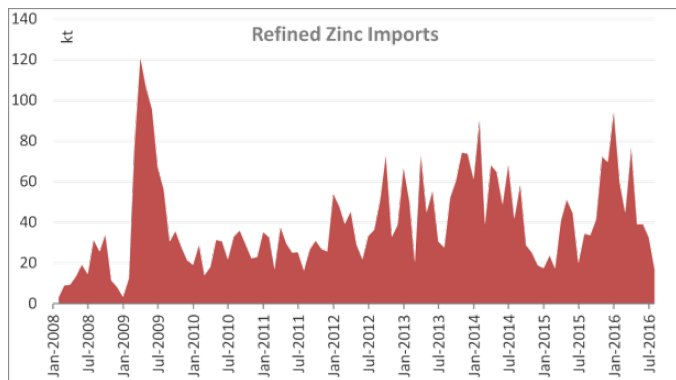
Source: Bloomberg, Morgan Stanley Research

Exhibit 62: Demand drivers: China's galvanized steel production and auto sales



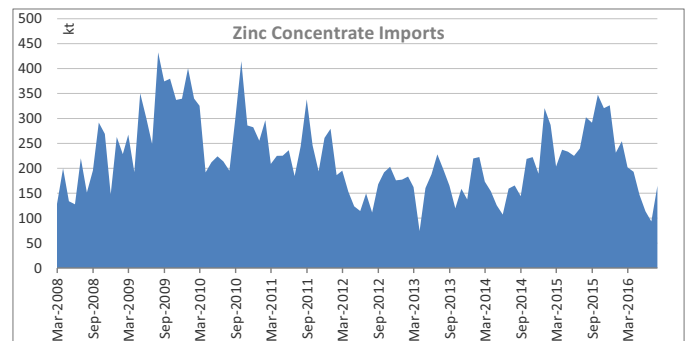
Source: Bloomberg, Morgan Stanley Research

Exhibit 63: Finished metal: China's refined zinc imports



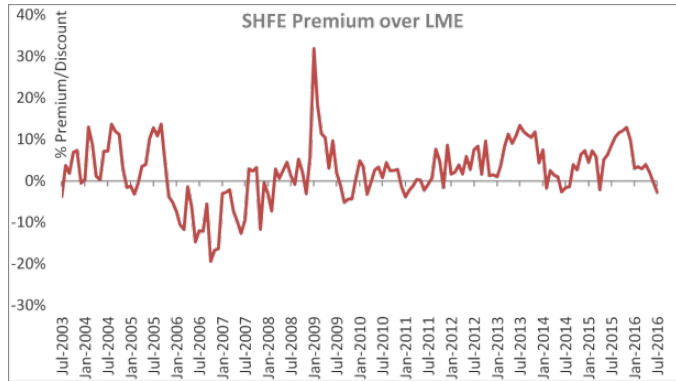
Source: Bloomberg, Morgan Stanley Research

Exhibit 64: Raw Materials: China's zinc concentrate imports



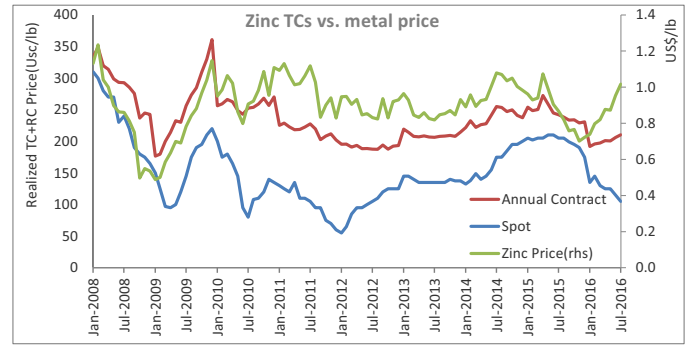
Source: Bloomberg, Morgan Stanley Research

Exhibit 65: Zinc price differentials: SHFE vs. LME



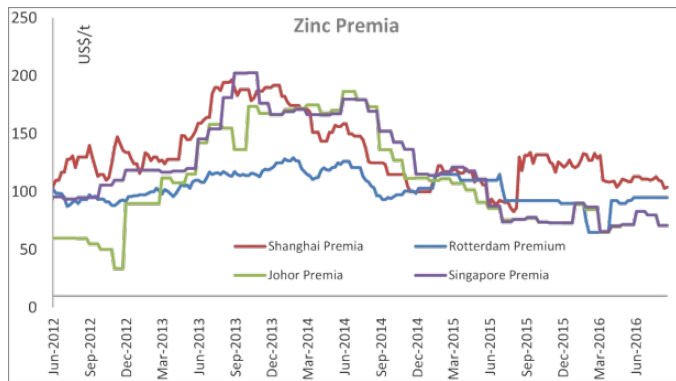
Source: Bloomberg, Morgan Stanley Research

Exhibit 66: Zinc TCs vs. Metal Price



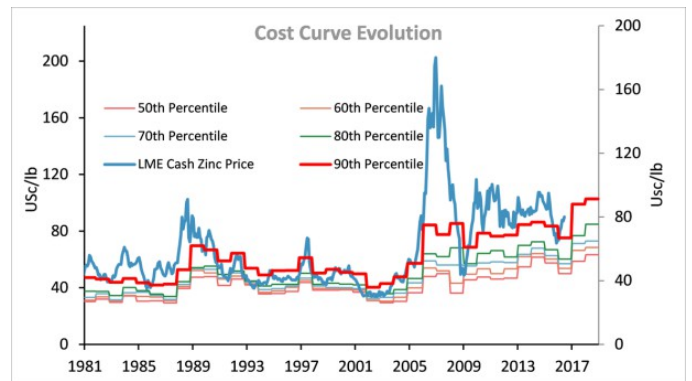
Source: Wood Mackenzie, Morgan Stanley Research

Exhibit 67: Physical demand: Zinc premia by region



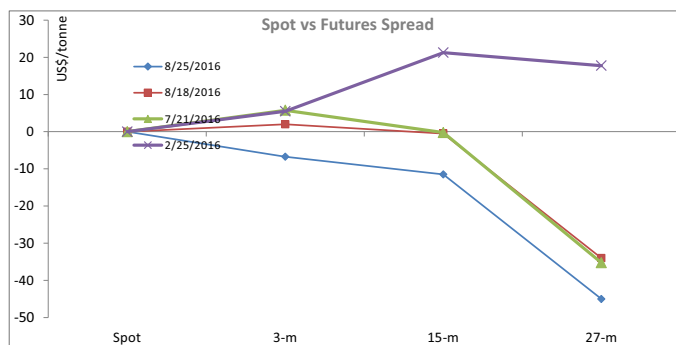
Source: Bloomberg, Morgan Stanley Research

Exhibit 68: Zinc cost curve evolution



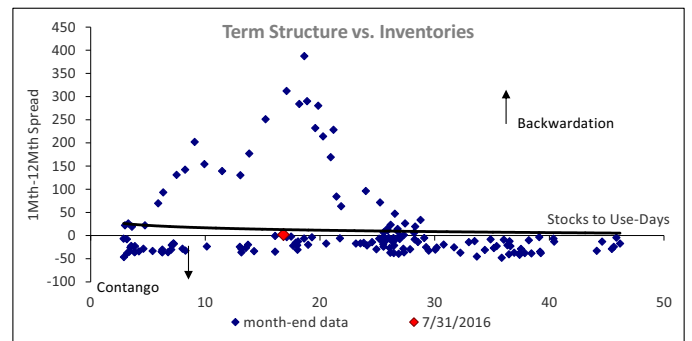
Source: Wood Mackenzie, Morgan Stanley Research

Exhibit 69: Contango vs. Backwardation: zinc futures curve movement



Source: Bloomberg, Morgan Stanley Research

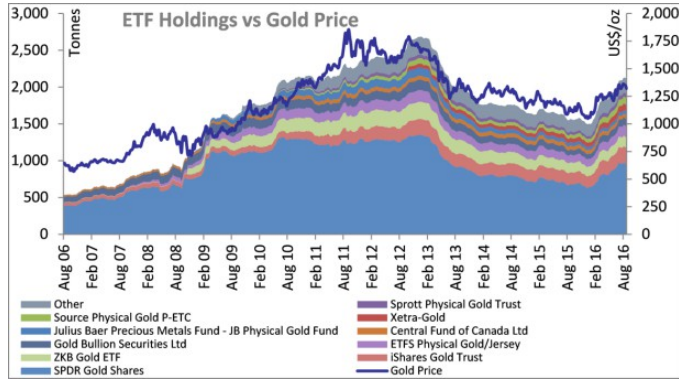
Exhibit 70: Zinc term structure vs. inventories



Source: Bloomberg, Morgan Stanley Research

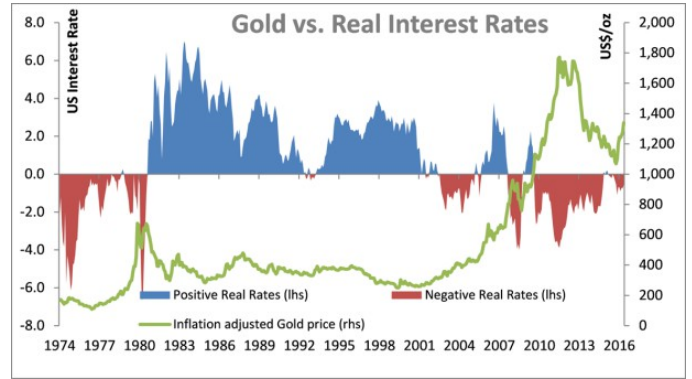
Gold and Precious Metals

Exhibit 71: ETF gold holdings vs. Gold price



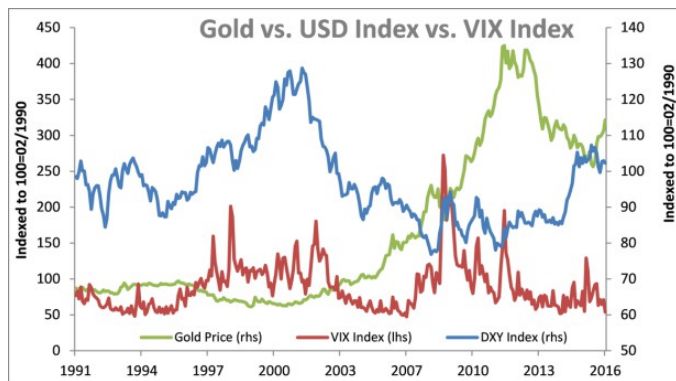
Source: Bloomberg, Morgan Stanley Research (Other includes: ETFs Gold Trust, Central GoldTrust, Royal Canadian Mint - Canadian Gold Reserves, iShares Gold Bullion ETF, db Physical Gold ETC, UBS ETF CH-Gold CHF hedged CHF, db Physical Gold Euro Hedged ETC, Pictet CH Precious Metals Fund - Physical Gold, iShares Gold CH, iShares Gold CHF Hedged CH, db Physical Gold ETC EUR, ETFS Physical Swiss Gold, Goldman Sachs Gold Exchange Traded Scheme - GS Gold BeES, Mitsubishi UFJ Japan Physical Gold ETF)

Exhibit 72: Gold price vs. Real Interest Rates



Source: Bloomberg, Morgan Stanley Research

Exhibit 73: Gold performance vs. volatility index vs. Dollar index



Source: Bloomberg, Morgan Stanley Research

Exhibit 74: Gold Imports: China vs. India



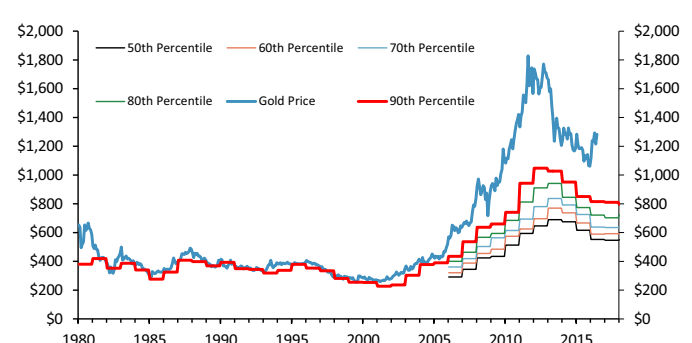
Source: Bloomberg, Morgan Stanley Research

Exhibit 75: Gold to Silver ratio



Source: Bloomberg, Morgan Stanley Research

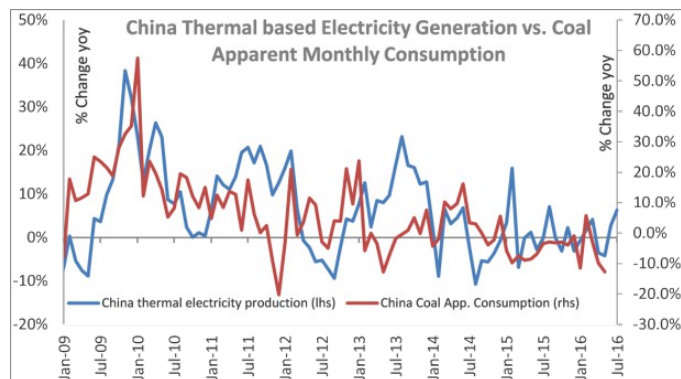
Exhibit 76: Gold cost curve (C1) evolution



Source: Wood Mackenzie, Morgan Stanley Research

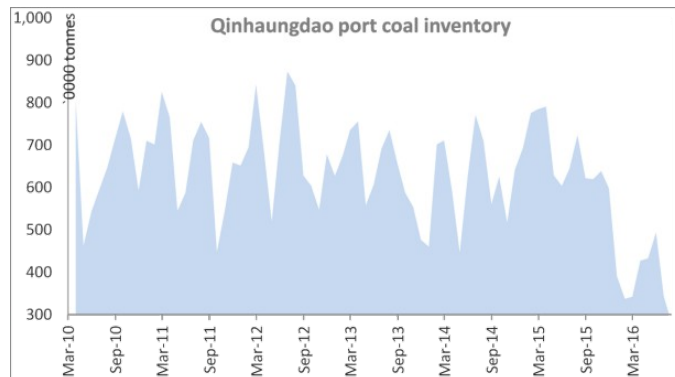
Coal

Exhibit 77: China's thermal based power generation vs. coal apparent monthly consumption



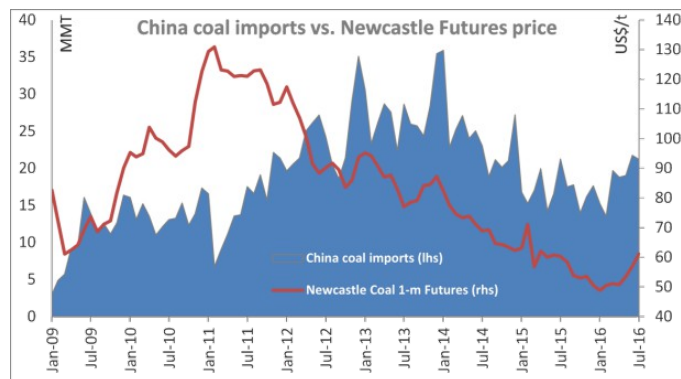
Source: NBS, Bloomberg, Morgan Stanley Research. Apparent Consumption is calculated as Domestic raw coal output less net coal exports

Exhibit 78: Coal inventories: Qinhuangdao port



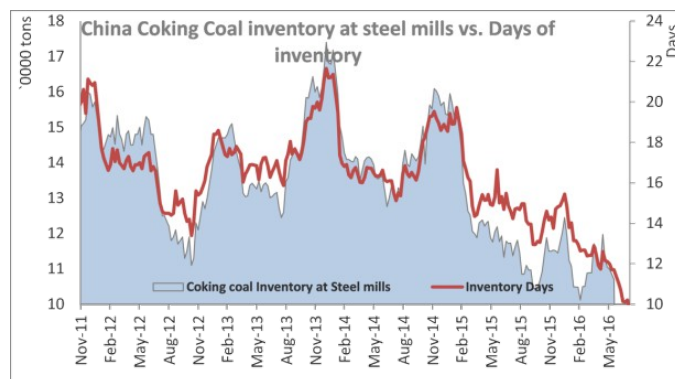
Source: Bloomberg, Morgan Stanley Research

Exhibit 79: China's coal imports vs. prices



Source: Bloomberg, Morgan Stanley Research

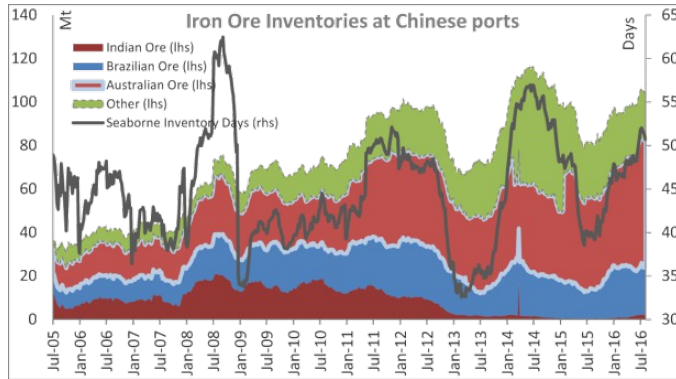
Exhibit 80: Inventories: China's coking coal inventories at steel mills vs. days of consumption



Source: Mysteel, Bloomberg, Morgan Stanley Research

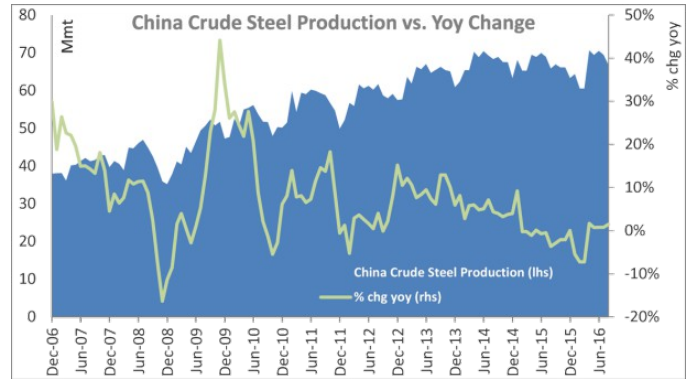
Iron Ore and Manganese

Exhibit 81: Iron Ore inventories at China's sea ports and inventory days of consumption



Source: Mysteel, Morgan Stanley Research

Exhibit 82: China's crude steel production, absolute and YoY change



Source: NBS, Bloomberg, Morgan Stanley Research

Exhibit 83: China's iron ore prices vs. steel prices



Source: Bloomberg, Morgan Stanley Research

Exhibit 84: Freight rates from key shipping regions to China



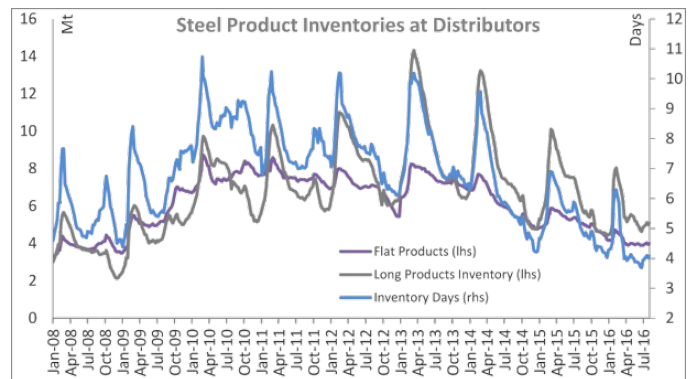
Source: Bloomberg, Morgan Stanley Research

Exhibit 85: China's iron ore inventories at small and mid-sized steel mills



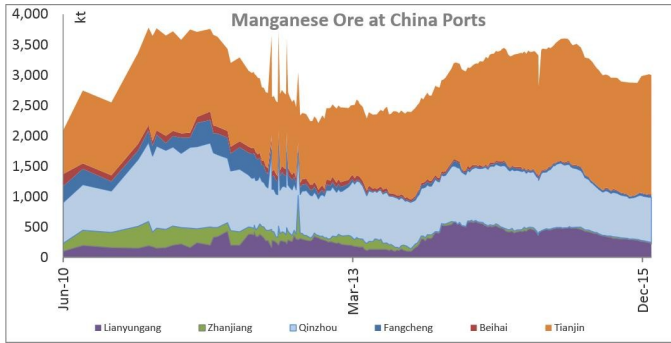
Source: Mysteel, Morgan Stanley Research

Exhibit 86: China's steel product inventories at distributor level



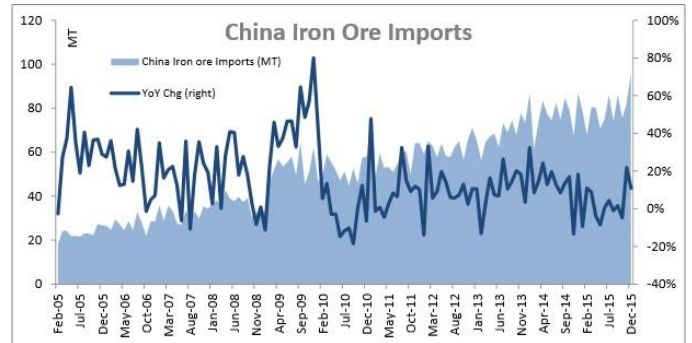
Source: Mysteel, Bloomberg, Morgan Stanley Research

Exhibit 87: Manganese ore at Chinese ports



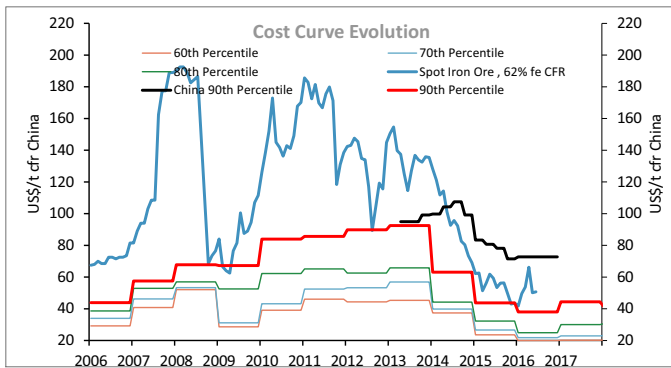
Source: Mysteel, Bloomberg, Morgan Stanley Research

Exhibit 88: China's iron ore imports



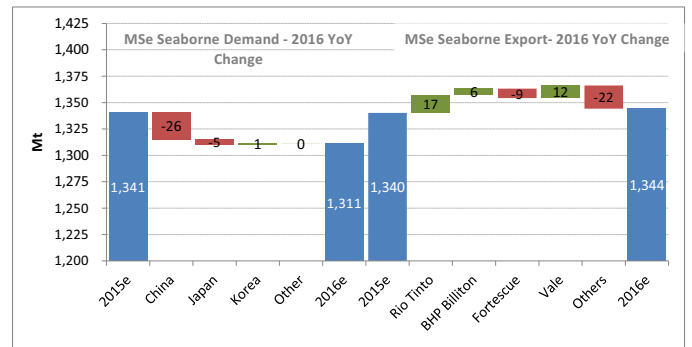
Source: Bloomberg, Morgan Stanley Research

Exhibit 89: Iron ore cost curve evolution



Source: Wood Mackenzie, Bloomberg, Morgan Stanley Research

Exhibit 90: 2016 Iron Ore S-D Waterfall Chart-MS Forecast

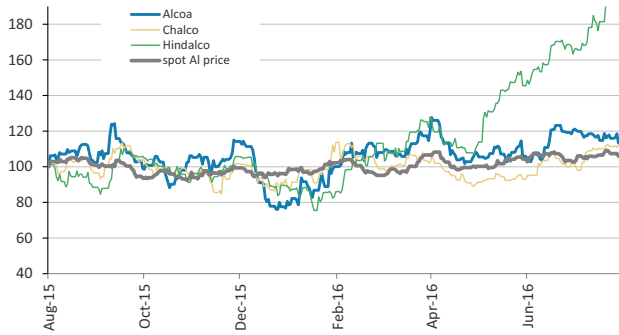


Source: Morgan Stanley Research

Equity vs. Commodity – Relative One-Year Performance

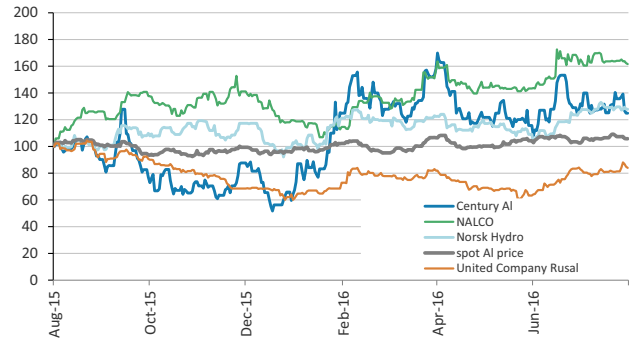
Aluminum, Alumina and Copper

Exhibit 91: Aluminum (large cap)



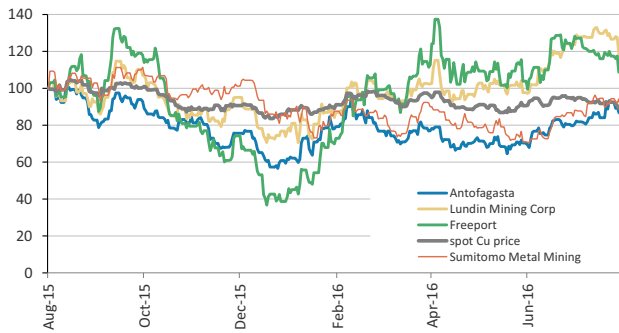
Source: Bloomberg, Morgan Stanley Research

Exhibit 92: Aluminum (small-medium cap)



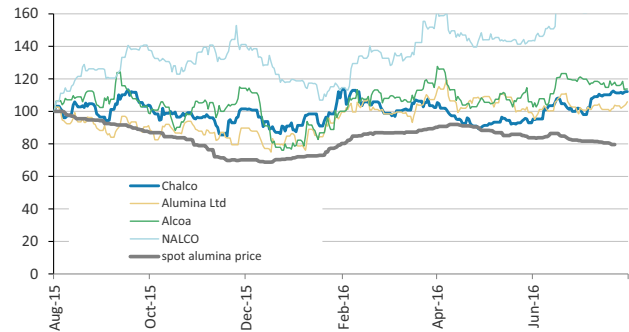
Source: Bloomberg, Morgan Stanley Research

Exhibit 93: Copper



Source: Bloomberg, Morgan Stanley Research

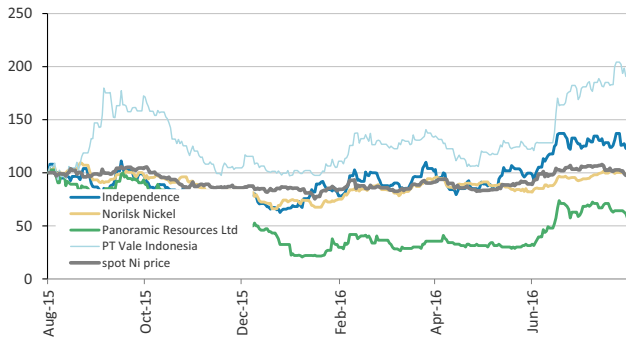
Exhibit 94: Alumina



Source: Bloomberg, Morgan Stanley Research

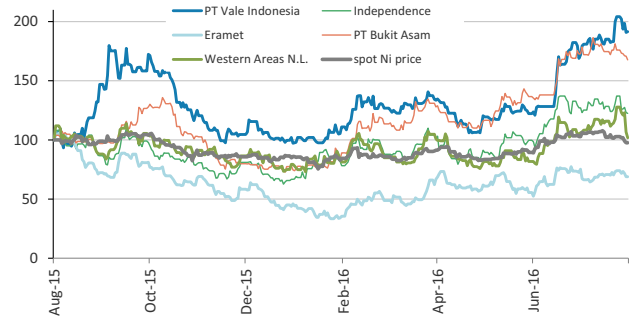
Nickel and Zinc

Exhibit 95: Nickel (large cap)



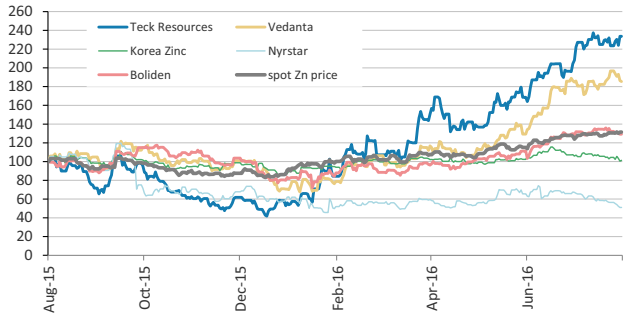
Source: Bloomberg, Morgan Stanley Research

Exhibit 96: Nickel (small cap)



Source: Bloomberg, Morgan Stanley Research

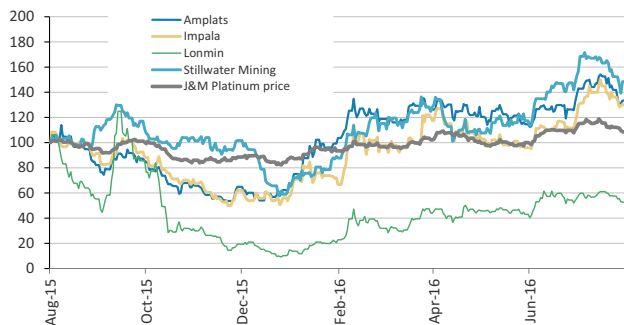
Exhibit 97: Zinc



Source: Bloomberg, Morgan Stanley Research

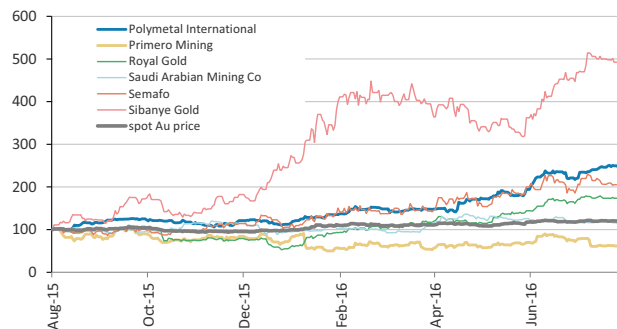
Precious Metals

Exhibit 98: PGMs



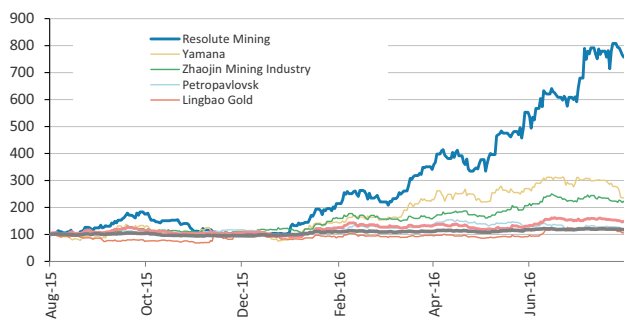
Source: Bloomberg, Morgan Stanley Research

Exhibit 99: Gold (large cap)



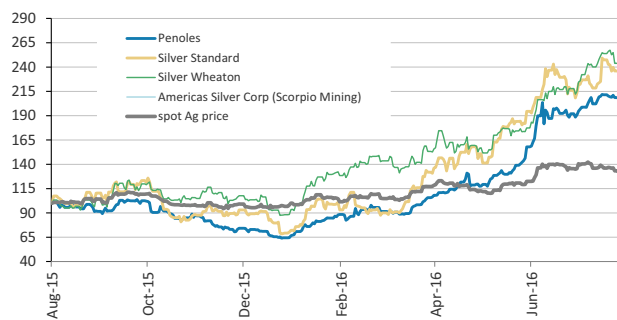
Source: Bloomberg, Morgan Stanley Research

Exhibit 100: Gold (small cap)



Source: Bloomberg, Morgan Stanley Research

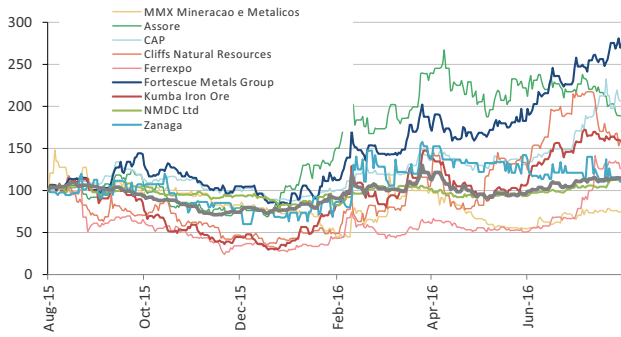
Exhibit 101: Silver



Source: Bloomberg, Morgan Stanley Research

Bulks – iron ore

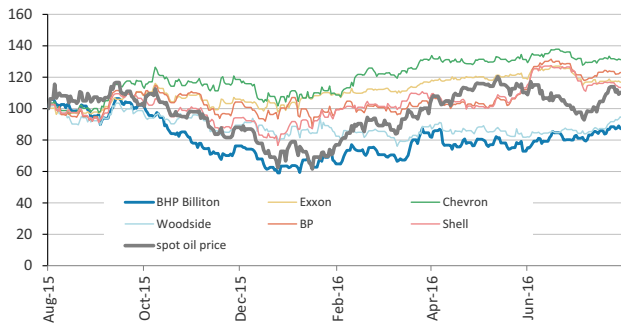
Exhibit 102: Iron ore



Source: Bloomberg, Morgan Stanley Research

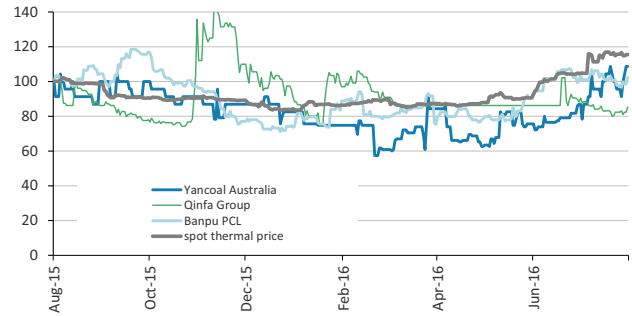
Energy – Oil, Thermal Coal, Uranium

Exhibit 103: Oil



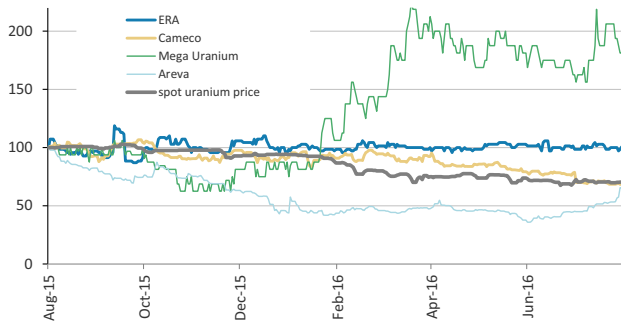
Source: Bloomberg, Morgan Stanley Research

Exhibit 104: Thermal Coal



Source: Bloomberg, Morgan Stanley Research

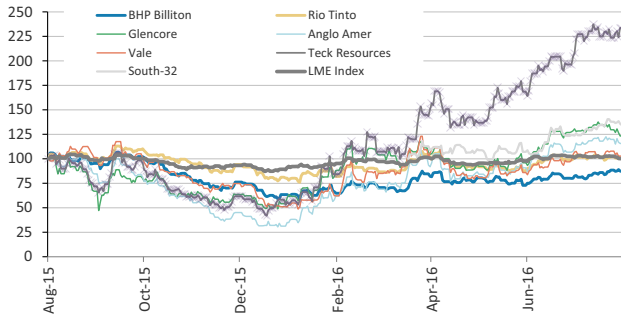
Exhibit 105: Uranium



Source: Bloomberg, Morgan Stanley Research

Diversifieds

Exhibit 106: Diversifieds



Source: Bloomberg, Morgan Stanley Research

Key Morgan Stanley Forecasts

Exhibit 107: Base metal price forecasts

Period	Aluminium			Copper			Nickel			Zinc		
	Bull	Base US\$/lb	Bear	Bull	Base US\$/lb	Bear	Bull	Base US\$/lb	Bear	Bull	Base US\$/lb	Bear
2016e	0.77	0.70	0.56	2.30	2.09	1.67	4.70	3.91	2.94	0.93	0.84	0.68
2017e	0.81	0.74	0.59	2.38	2.16	1.73	5.18	4.50	3.60	1.10	1.00	0.80
2018e	0.88	0.80	0.68	2.68	2.44	2.19	6.35	5.78	5.20	1.05	0.95	0.86
2019e	0.88	0.80	0.68	2.97	2.70	2.43	7.40	6.73	6.05	1.08	0.98	0.88
2020e	1.01	0.92	0.78	3.30	3.00	2.70	8.11	7.38	6.64	1.10	1.00	0.90
2021e	1.08	0.98	0.83	3.36	3.05	2.75	9.24	8.40	7.56	1.16	1.05	0.95
LT nom.		0.98			3.08			8.36			1.06	

Source: Morgan Stanley Commodities Research estimates

Exhibit 108: Bulks and Uranium price forecasts

Period	Iron Ore CFR 62% eqv, US\$/t			Hard Coking Coal (contract)			Thermal Coal			Spot Uranium			Uranium Term Price		
	Bull	Base US\$/t	Bear	Bull	Base US\$/t	Bear	Bull	Base US\$/t	Bear	Bull	Base US\$/lb	Bear	Bull US\$/lb	Base US\$/lb	Bear US\$/lb
2016e	58	46	34	98	86	69	61	53	45	39	30	19	46	36	23
2017e	55	42	32	98	86	68	66	57	45	42	33	24	50	40	29
2018e	67	51	41	118	103	83	67	58	49	46	38	29	55	46	34
2019e	68	54	43	118	108	86	69	60	51	55	46	35	67	56	43
2020e	67	54	43	130	116	93	71	62	52	61	54	45	73	64	54
2021e	70	56	45	139	124	99	74	64	54	70	62	52	84	74	63
LT nom.		52			120			65			62				

Source: Morgan Stanley Commodities Research estimates

Exhibit 109: Precious metals price forecasts

Period	Gold			Silver			Platinum			Palladium		
	Bull	Base US\$/oz	Bear	Bull	Base US\$/oz	Bear	Bull	Base US\$/oz	Bear	Bull	Base US\$/oz	Bear
2016e	1,527	1,269.6	1,079	19.74	16.41	13.94	1,093	994	894	633	576	518
2017e	1,560	1,300	1,102	20.16	16.80	14.25	1,140	1,036	933	715	650	585
2018e	1,313	1,250	1,188	17.22	16.40	15.58	1,185	1,078	970	858	780	702
2019e	1,271	1,210	1,150	17.85	17.00	16.15	1,350	1,228	1,105	964	876	788
2020e	1,281	1,220	1,159	19.43	18.50	17.58	1,515	1,378	1,240	996	905	815
2021e	1,281	1,220	1,159	21.00	20.00	19.00	1,680	1,528	1,375	1,024	931	838
LT nom.		1,209			20.89			1,595			935	

Source: Morgan Stanley Commodities Research estimates

Global Metals & Mining Team

Exhibit 110: Morgan Stanley Research Team and Contacts

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Source: Morgan Stanley Research

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(as of July 31, 2016)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1149	34%	274	38%	24%	566	35%
Equal-weight/Hold	1461	44%	351	48%	24%	729	46%
Not-Rated/Hold	77	2%	8	1%	10%	11	1%
Underweight/Sell	647	19%	95	13%	15%	289	18%
TOTAL	3,334		728			1595	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months.

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

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Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

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Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

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