

Valuations: Indian companies

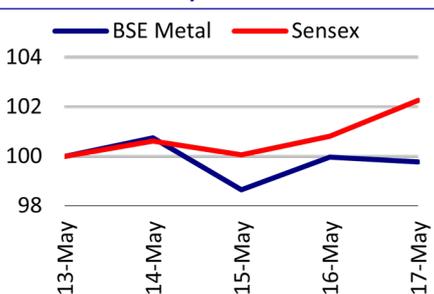
Company	Price (INR)	EV/EBITDA (x)		P/B (x) FY19E
		FY19E	FY20E	
Steel				
Tata Steel	469	5.1	5.6	0.9
JSW Steel	276	6.6	7.8	2.1
JSPL	158	6.7	6.3	0.5
SAIL	48	7.1	6.1	0.5
Non-Ferrous				
Hindalco	195	5.3	5.7	1.1
Nalco	49	2.4	4.1	0.9
Vedanta	163	5.7	4.6	1.0
Rain Ind.*	97	4.9	6.7	0.7
Mining				
Coal India	233	3.9	3.9	7.0
HZL	255	8.5	7.1	3.2
NMDC	90	3.2	4.7	1.1

Note: Detailed table on pg 25 Source: MOSL

Valuations: Global companies

	Price	EV/EBITDA (x)		P/B (x) CY18
		CY18	CY19	
Mining				
BHP-Billitc	AUD 38.46	6.0	5.8	na
FMG	AUD 8.95	4.7	4.4	na
Rio Tinto	USD 101.35	5.3	5.7	na
Vale	USD 47.72	4.5	4.8	1.4
Teck Resou	USD 20.42	3.8	4.2	0.7
Anglo Ame	BP 1964.4	4.1	4.4	na
STEEL				
Arcelor Mit	EUR 14.622	3.8	3.6	0.4
Posco	KRW 234.5	4.2	4.0	0.5
US Steel	USD 14.59	3.9	3.8	0.6
Nucor	USD 53.29	5.8	6.0	1.6
JFE	JPY 1633	6.4	6.1	na
Gerdau	BRL 13.74	5.3	5.0	1.1
Angang	CNY 5.04	4.8	4.7	0.8
Ali - Smelting				
Alcoa	USD 24.5	3.5	3.3	0.9
Hydro	NOK 33.6	5.9	4.3	0.8
Rusal	HKD 3	8.1	6.7	0.9

BSE Metals Index v/s Sensex



Source: Bloomberg

Note: Indexed to 100 on 13 May 2019

Investors are advised to refer through important disclosures made at the last page of the Research Report.

Metal Prices

	CMP	change since						
		17-May	%	10-May	%	31-Mar	%	1-Jan
STEEL								
TMT- Mumbai (INR/ton)	35,600	-1	36,100	-4	37,000	-3	36,700	
HRC- Mumbai (INR/ton)	41,000	-1	41,500	-2	42,000	-5	43,000	
HRC (USD/ton) fob CIS	470	-1	473	-9	515	4	450	
METALLICS								
Sponge iron - Raipur (INR/ton)	19,500	-1	19,600	-2	19,800	-8	21,200	
Pig iron - Raipur (INR/ton)	28,300	0	28,300	3	27,500	-2	28,900	
Iron ore spot (USD/ton) cfr China	90	2	88	9	82	27	71	
Coking coal (USD/ton) fob Aus.	213	2	209	3	207	-3	219	
ALUM.								
LME Spot (USD/ton)	1,805	2	1,765	-5	1,900	-3	1,870	
Indian prices (INR '000/ton)	150	4	144	-1	151	15	130	
LME inventories ('000 ton)	1,240	-2	1,267	10	1,129	-2	1,271	
ZINC								
LME Spot (USD/ton)	2,755	0	2,751	-8	3,000	10	2,511	
Indian prices (INR '000/ton)	218	1	216	5	208	24	175	
LME inventories ('000 ton)	105	8	98	101	52	-19	129	
COPPER								
LME Spot (USD/ton)	6,025	-2	6,136	-7	6,485	1	5,965	
Indian prices (INR '000/ton)	426	0	427	-3	437	5	405	
LME inventories ('000 ton)	191	-10	211	13	169	44	132	
OTHERS								
Gold (INR/10gms)	31,911	0	31,961	1	31,601	1	31,531	
Sliver (INR/1kg)	36,383	-2	36,970	-3	37,326	-5	38,270	
Lead Spot LME (USD/ton)	1,809	-1	1,823	-11	2,022	-13	2,090	
Brent crude (USD/bbl)	72.2	2	70.6	6	68.4	34	53.8	
MISC.								
INR/USD	70.4	1	69.9	1	69.4	1	69.6	
BDI	1,040	1	1,026	51	689	-18	1,271	

Steel prices continue declining

- **Indian steel:** Long product (TMT Mumbai), Sponge iron and scrap prices were lower ~1% WoW. Domestic HRC prices were also ~1% lower WoW. Iron ore prices remained unchanged WoW, while Pellet prices were flat WoW. Export and import price offers were slightly lower.
- **Raw materials:** Iron ore prices (China CFR) increased ~2% WoW, while Thermal coal prices were down ~1% WoW. Coking coal and China's pellet import prices were ~2% higher WoW. But, Chinese graphite electrode prices declined ~6%.
- **Europe:** CIS HRC export prices were ~1% lower WoW.
- **China steel prices:** Chinese HRC and rebar prices decreased ~1% WoW. Export prices for HRC were ~2% lower.
- **Base metals:** Aluminum (cash LME) was up ~2% WoW. Copper (cash LME) was down ~2% WoW. Zinc (cash LME) was largely unchanged WoW. Lead (cash LME) was down ~1% WoW. Brent crude prices were up ~2% WoW.

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Ferrous

HRC prices declined 1.2%
WoW to INR41,000/t

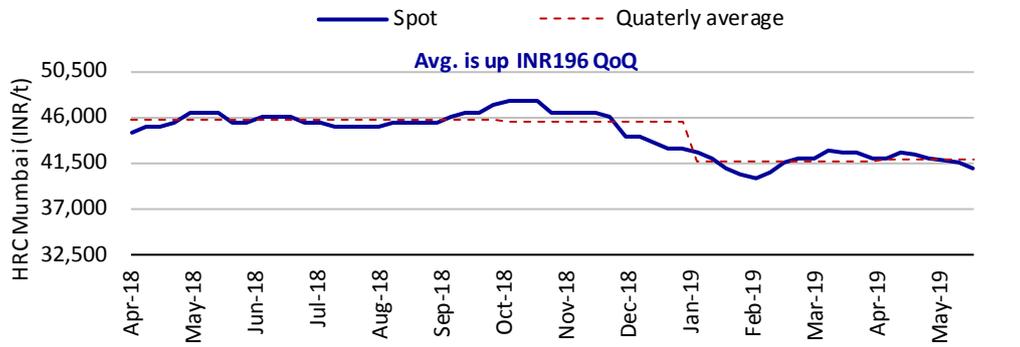
Long products (TMT
Mumbai) prices were 1.4%
lower WoW at
INR35,600/t.

Sponge iron prices were
0.5% lower at INR19,500/t.

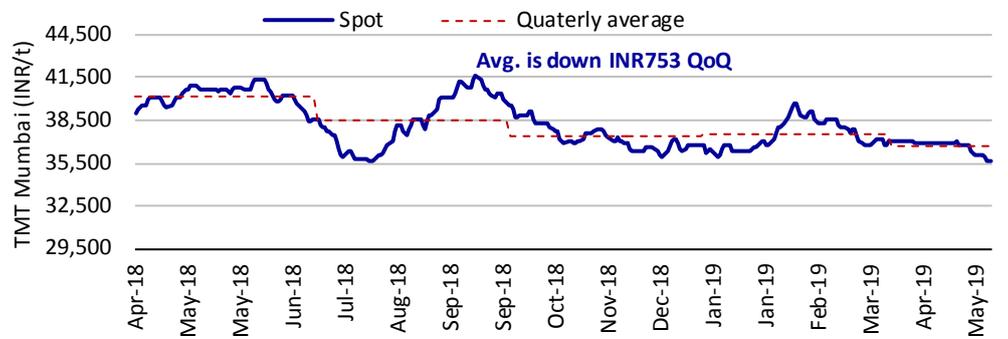
Ferrous

INDIAN DOMESTIC MARKET

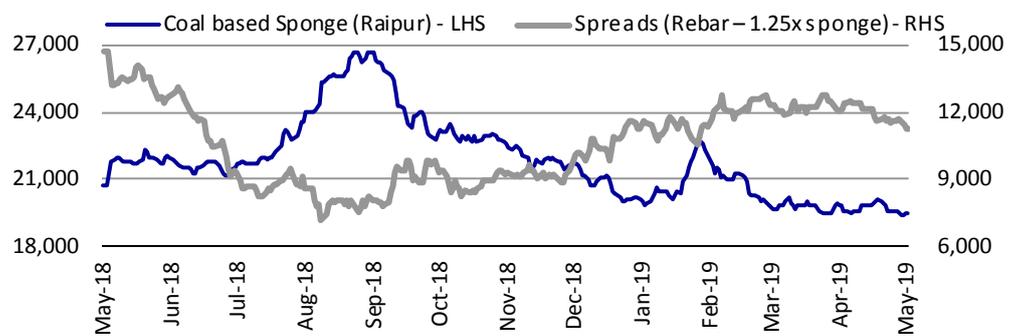
HRC prices (INR/T, excl. GST)



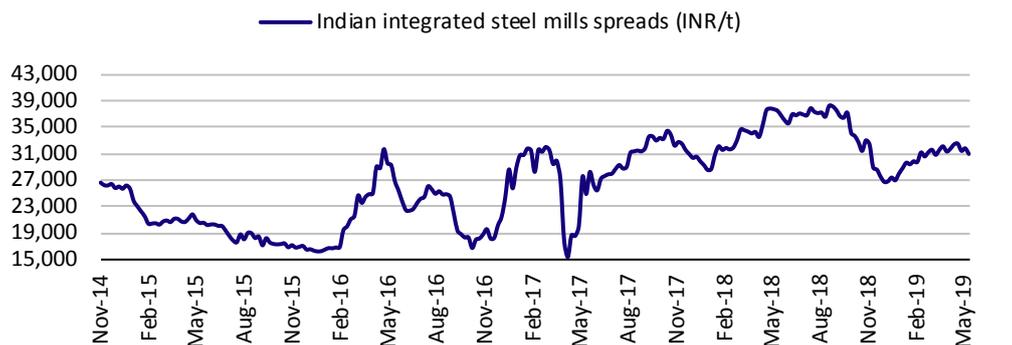
Rebar prices (INR/T, excl. GST)



Sponge iron (made from lumps) prices & spreads to Rebar (INR/T, excl. GST)



India: Integrated steel mills spreads (Import parity HRC – 1xcoking coal)



Source: SteelMint, WSA, MOSL

Ferrous

Scrap prices were down 0.8% WoW to INR24,800/t.

Iron ore lump prices were unchanged WoW.

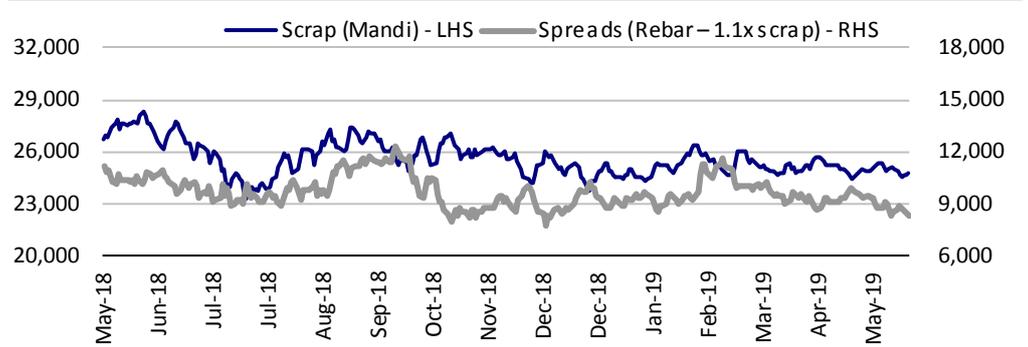
Iron ore fines prices were unchanged WoW.

Pellet prices were unchanged WoW to INR5,750/t.

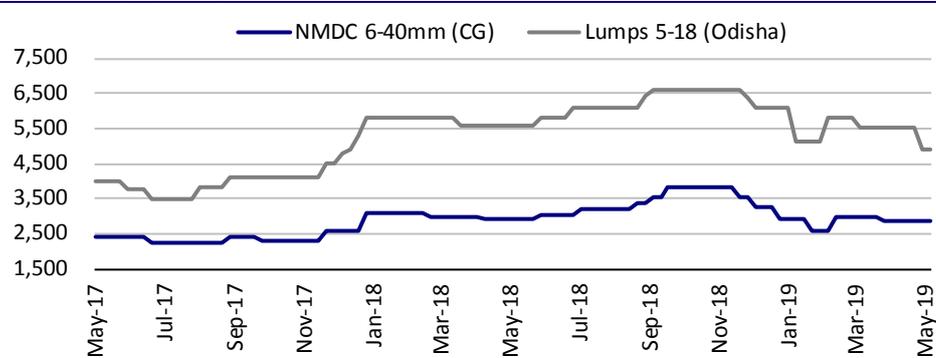
Ferrous

INDIA

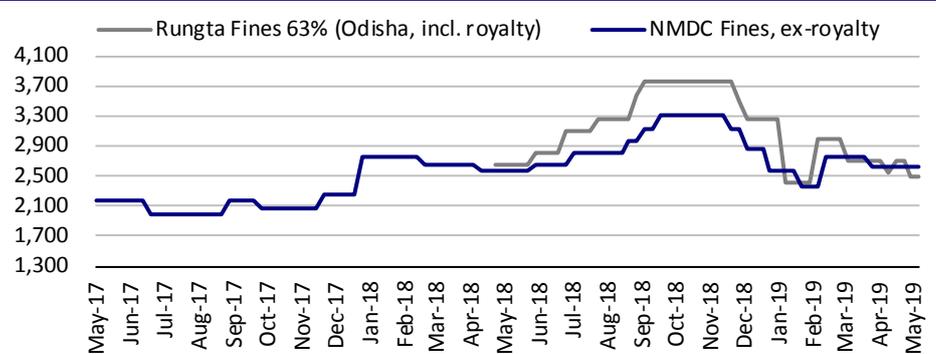
Scrap Mandi & spreads to Rebar (INR/t)



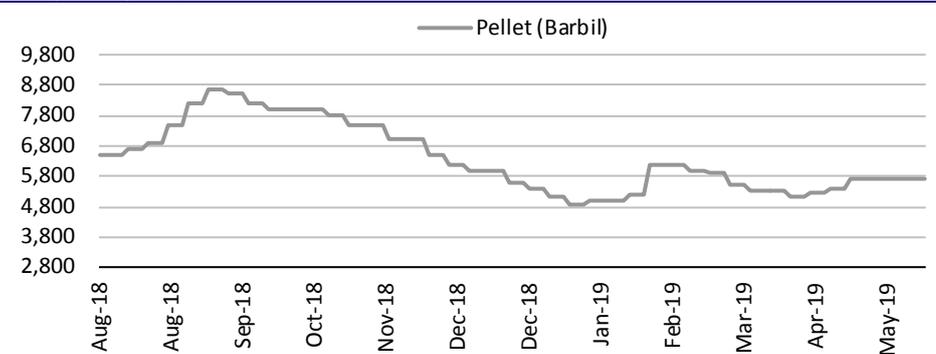
Iron ore lumps (INR/t)



Iron ore fines (INR/t) ex mine



Pellet (Barbil) INR/t

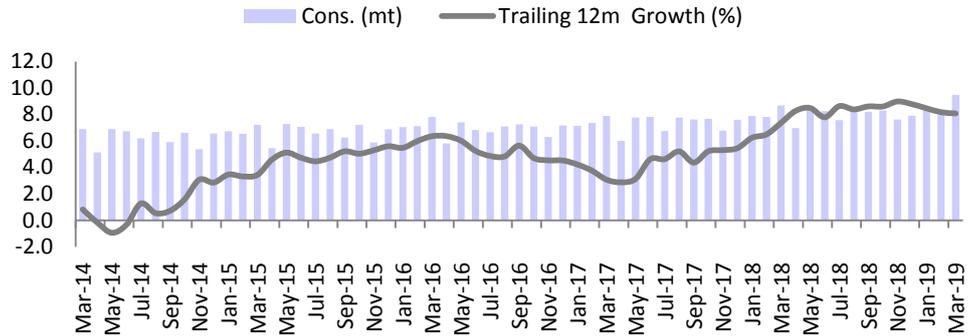


Source: SteelMint, WSA, MOSL

India Monthly steel trends

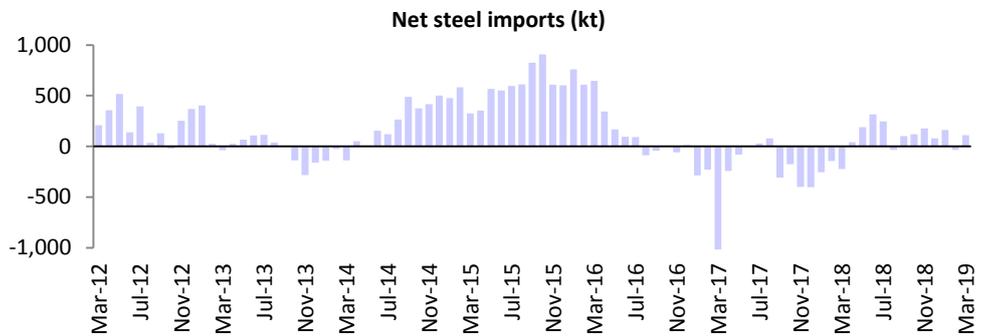
Steel consumption (mt) and growth (trailing 12-month) YoY %

India steel demand grew 9.1% YoY in March 2019.



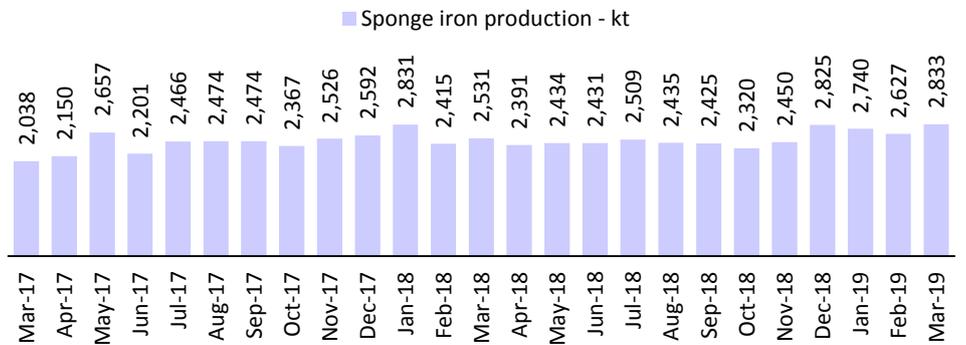
Steel imports and exports - kt

India was a marginal net importer of steel in March 2019.



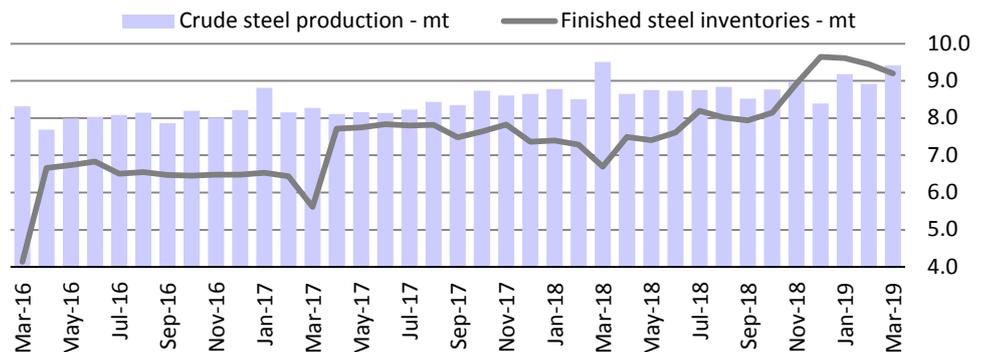
Sponge iron production - kt

Sponge iron production was up ~ 12% YoY to 2.83mt in March 2019.



Crude steel production & finished steel inventories - mt

Crude steel production was down 1% YoY in March 2019. Inventories lowered 0.2mt MoM to 9.2mt

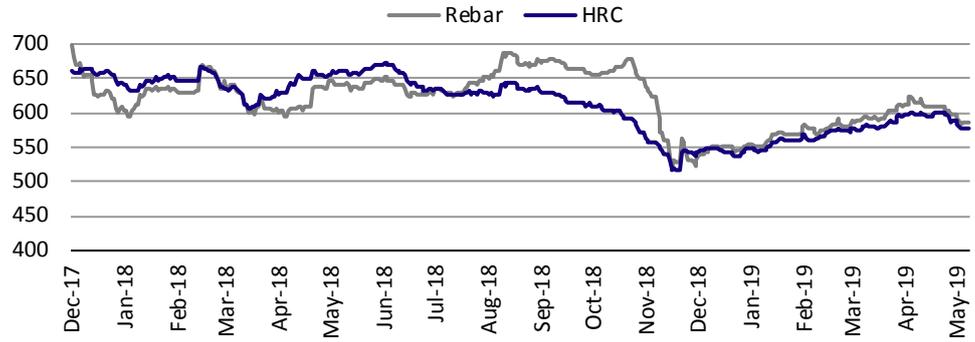


Source: JPC

China

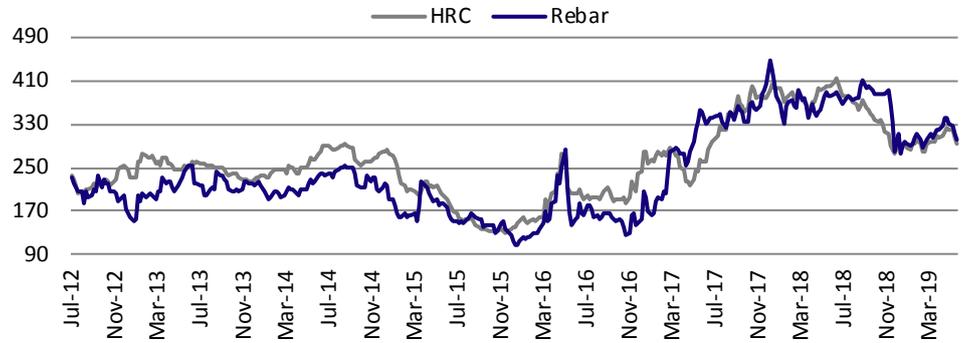
Chinese local rebar and HRC prices declined ~1% each WoW.

China domestic prices (USD/ton)



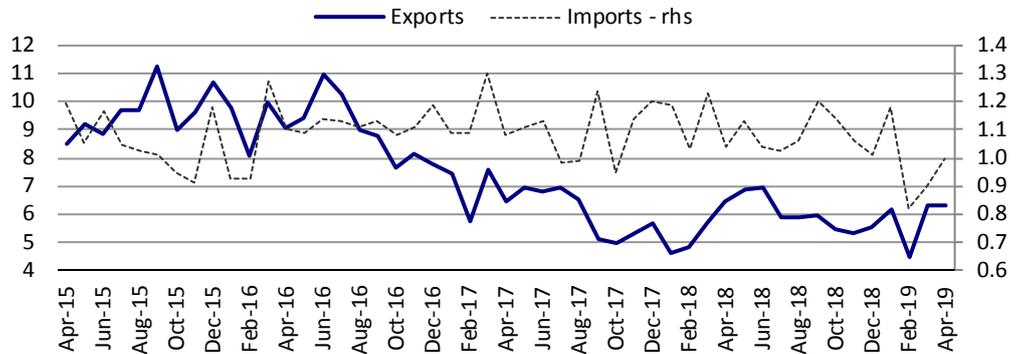
Chinese steel product spreads were lower.

Steel spreads (Steel price - 1.6x iron ore - 0.55x coke) for Chinese producers



Chinese steel exports were lower ~2% YoY to 6.3mt in April 2019.

Steel trade (m ton)



Steel inventories in China were at 3.8mt.

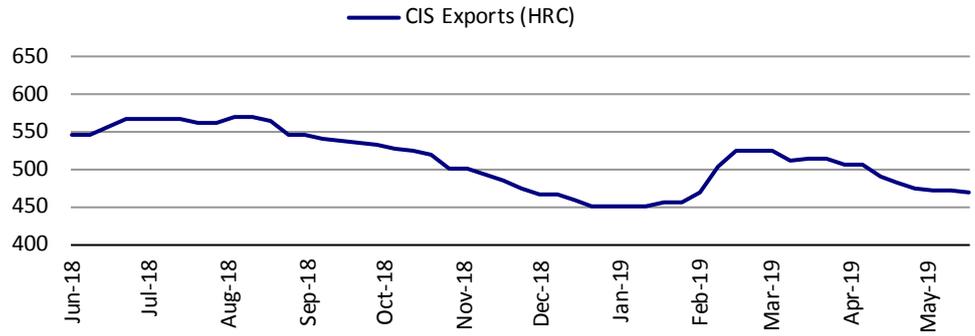
Steel inventories in main China cities (m tons)



Other regions

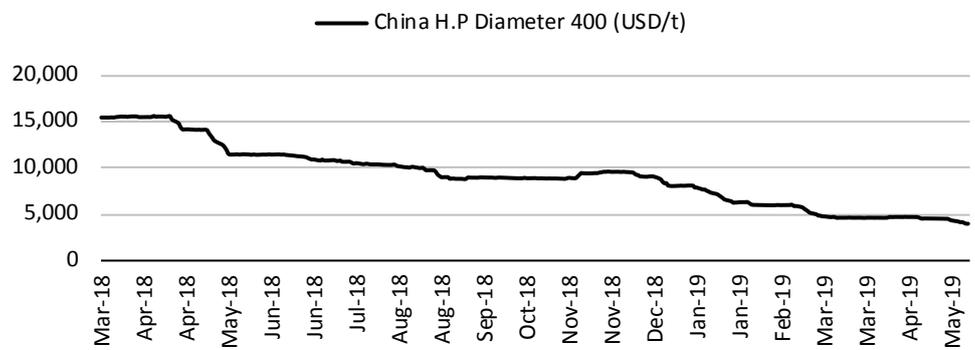
CIS export HRC prices were down 0.6% WoW at USD470/t.

CIS HRC export prices (USD/ton) fob basis



Electrode prices in China for High Power Diameter 400 (USD/ton)

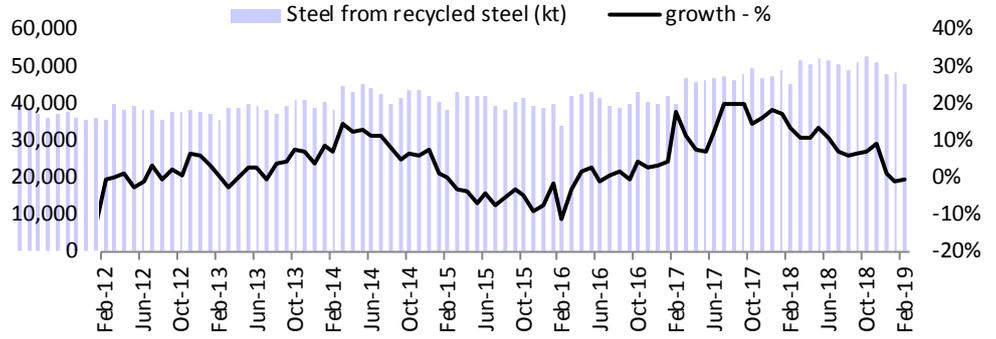
Prices were lower ~6% WoW.



Other regions

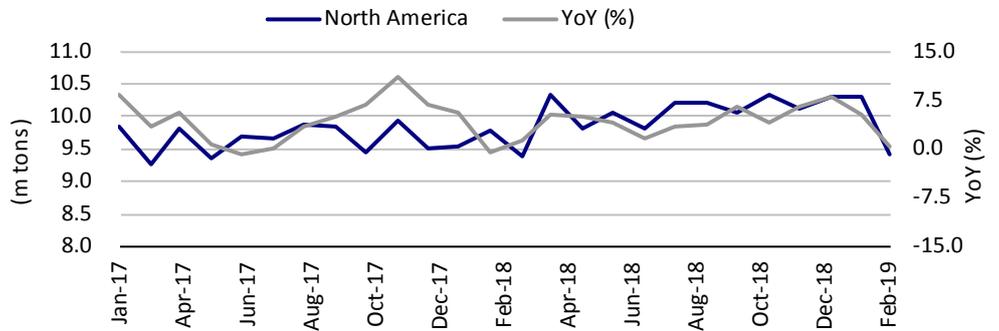
Global steel production from recycled steel - kt (Crude steel prod – BF production*0.96)

Global steel production from recycled steel decreased 0.5% YoY in February 2019.



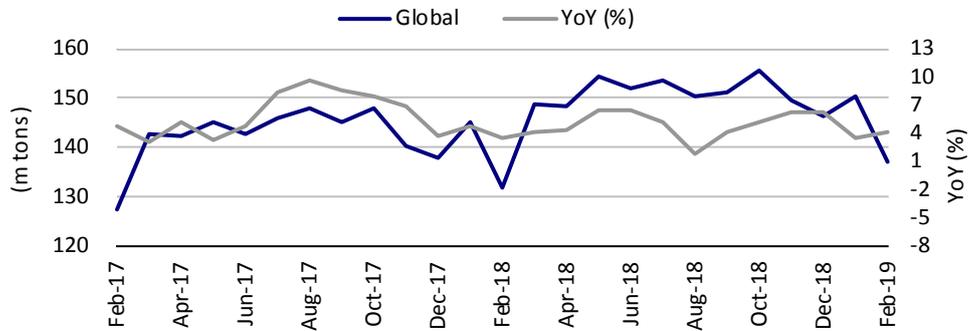
North America: Monthly crude steel production

US steel production increased 0.2% YoY to 9.4mt in February 2019.



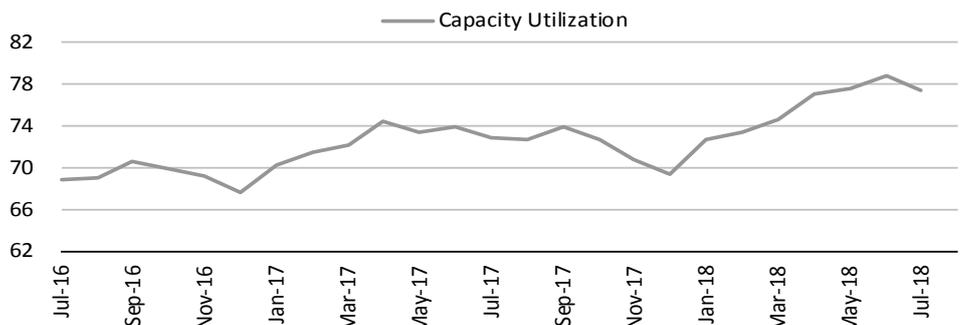
Global: Monthly crude steel production

Global crude steel production increased 4.1% YoY to 137.3mt in February 2019.



Global: Monthly crude steel capacity utilization

Capacity utilization improved 460bps YoY to 77.5% in July 2018.

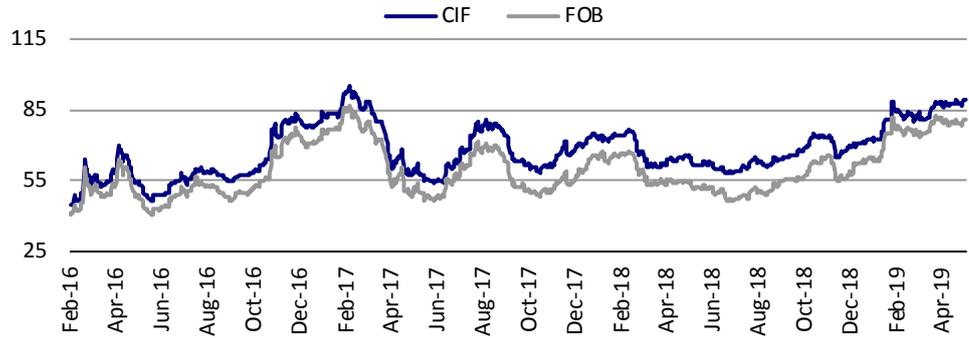


Source: Bloomberg, WSA, MOSL

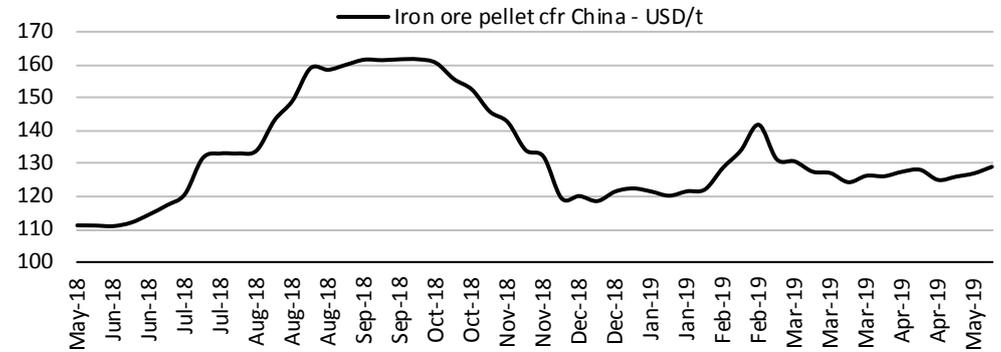
Steel raw materials

Iron ore (China cfr) prices increased ~2% WoW.

Import price of 62% grade iron-ore fines in China (USD/ton)

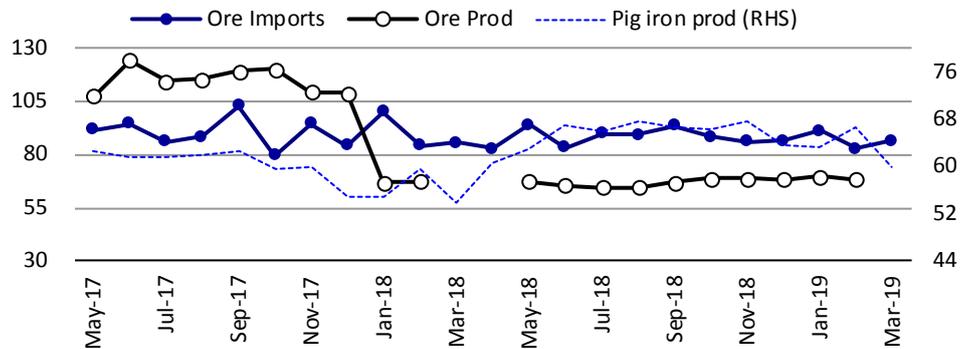


Pellet China cfr (USD/ton)



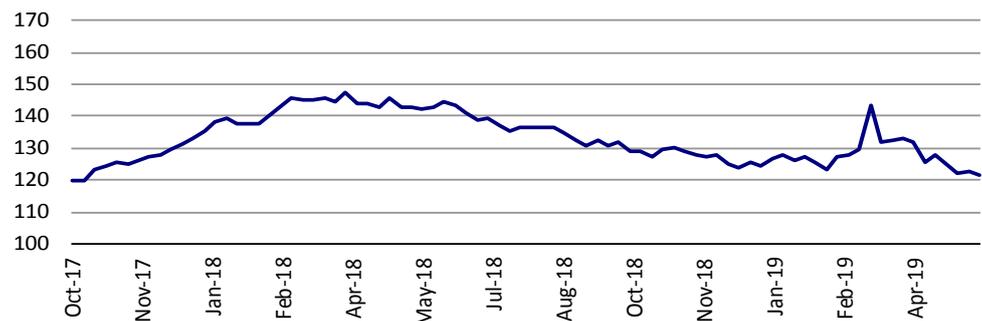
China iron ore imports increased 0.8% YoY to 86.4mt in March 2019.

China iron-ore production and imports (m tons)



China iron ore inventories were lower WoW at 121mt.

China's iron-ore inventories (mt)

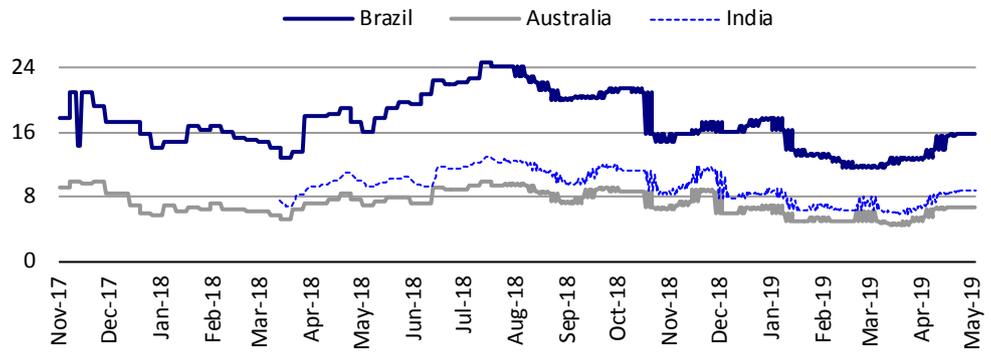


Source: Bloomberg, MOSL

Steel raw materials

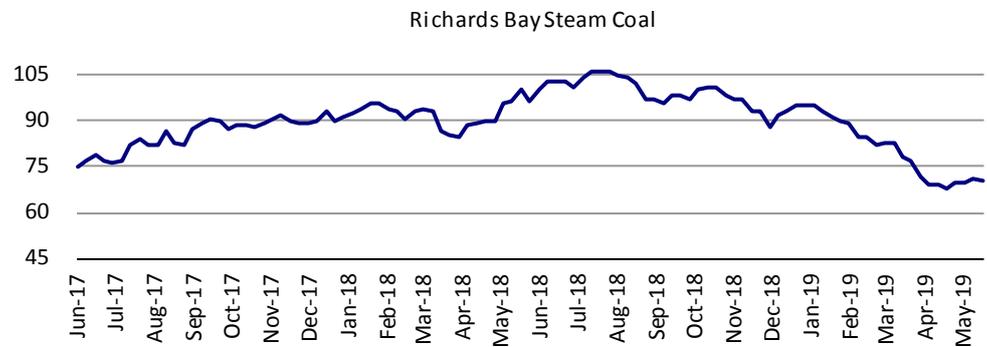
Freight rates to China (USD/ton)

Freight rates were unchanged WoW.



Coal price index

Richards Bay thermal coal prices were at USD71/t

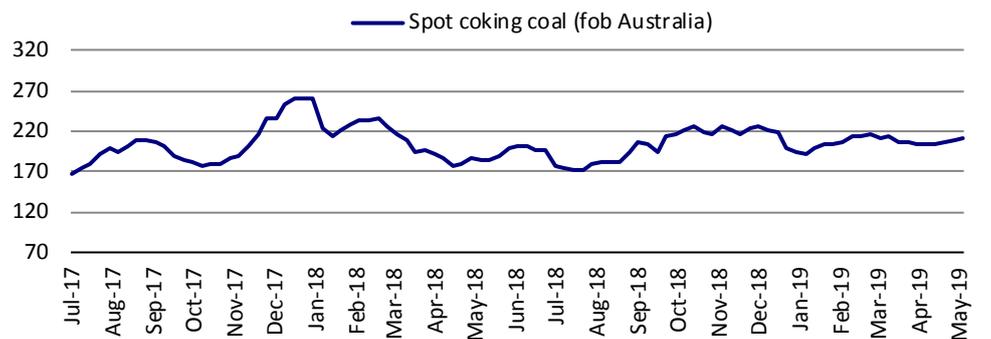


Coke price index (fob China)



Coking coal (USD/t)

Coking coal prices were ~1.6% higher WoW.



Non-ferrous

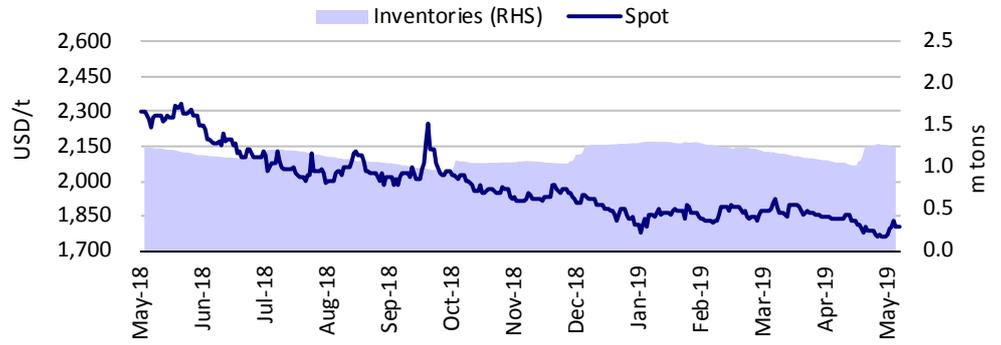
Aluminum (cash LME) was up ~2% WoW at USD1,805/t.

Global aluminum production was up 5.9% YoY to 5.13mt in Aug 2018.

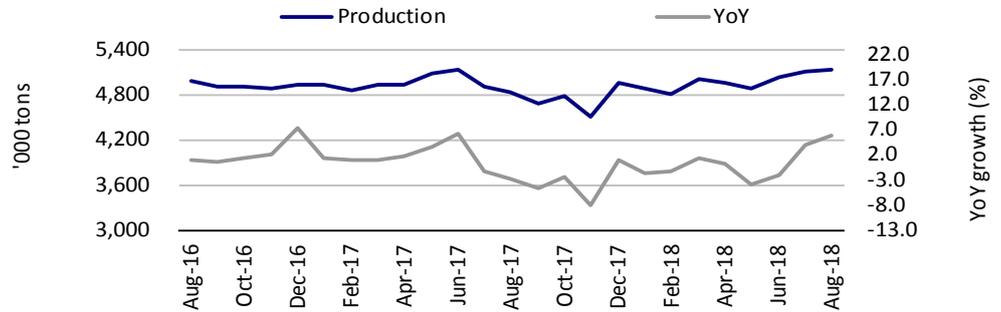
Non-ferrous

Aluminum

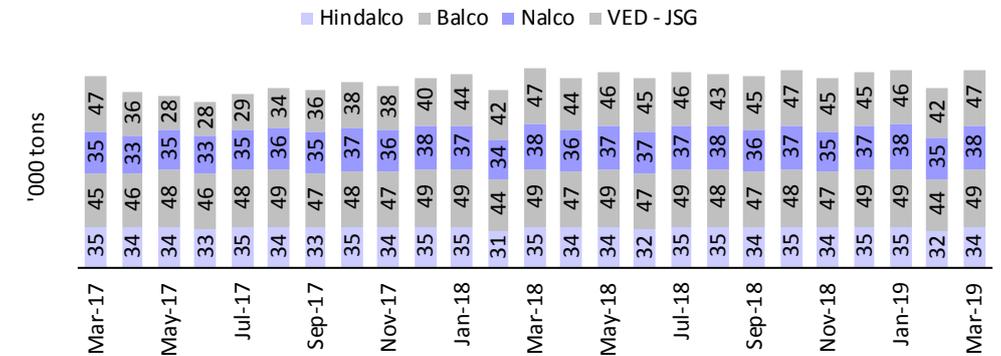
LME inventories and spot prices



Global primary aluminum monthly production and YoY growth



India: Company-wise primary aluminum monthly production

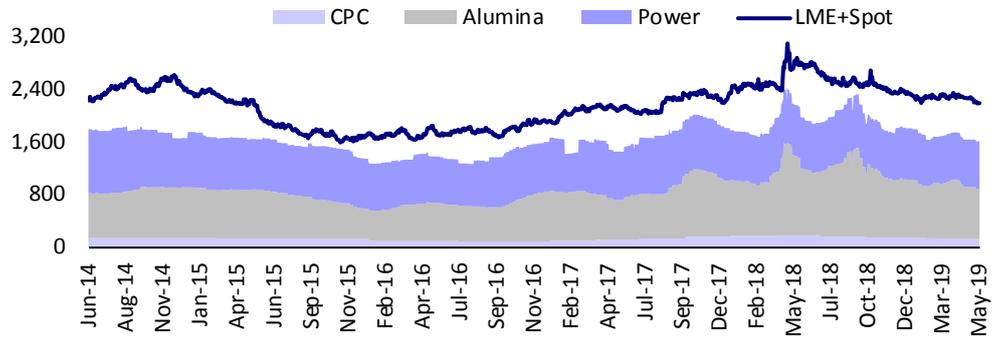


Non-ferrous

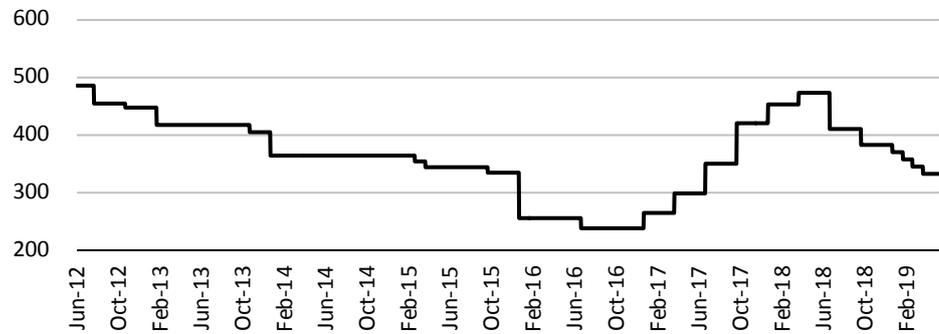
Aluminum

Aluminum raw material and power cost for marginal producer in USA (USD/t)

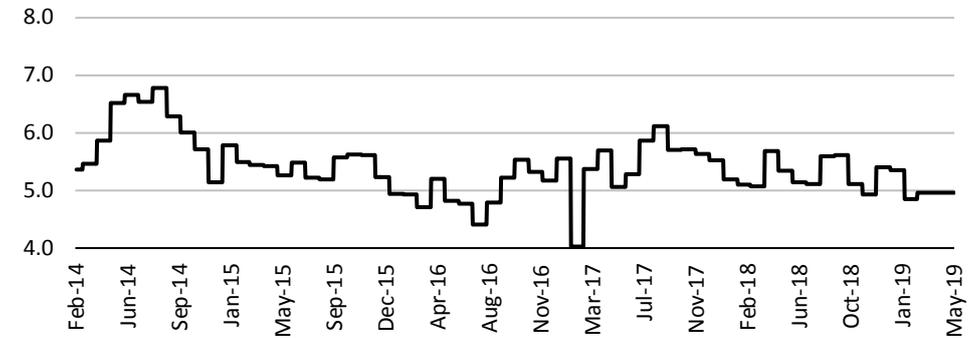
All-in-aluminum was at USD2,232/t.



CPC US (USD/t)



Industrial Power US (Louisiana) per mwh

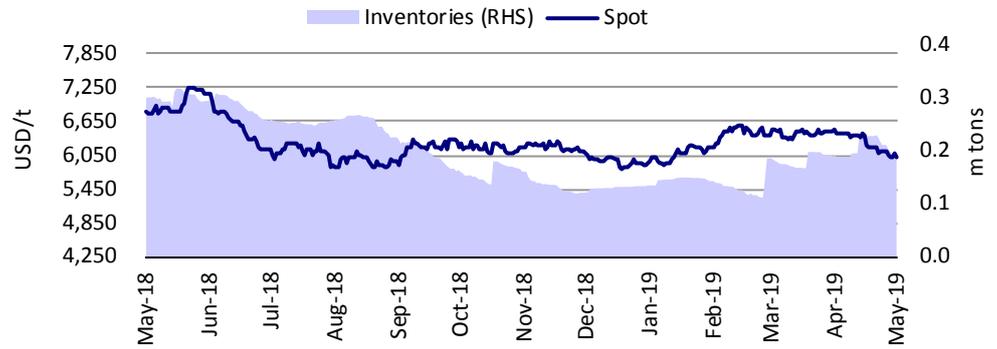


Source: Bloomberg, Industry, MOSL

Non-ferrous

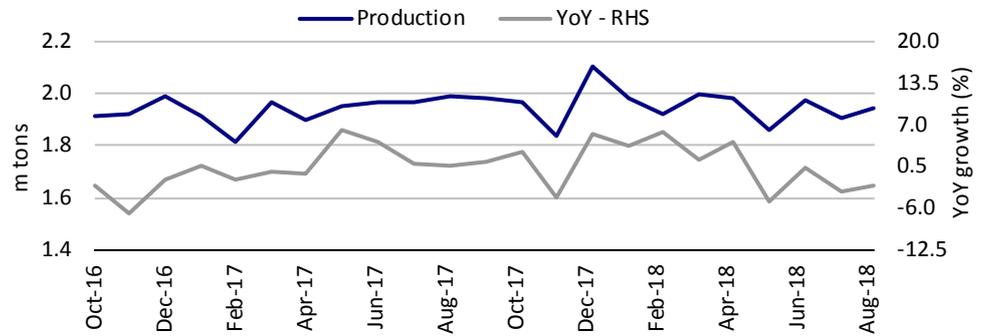
Copper LME inventories and prices

Copper (cash LME) prices were down ~2% WoW to USD6,025/t.

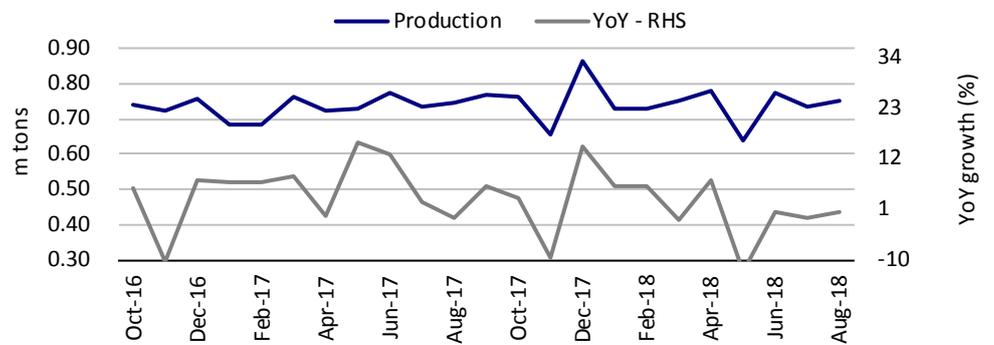


Global refined copper monthly production and YoY growth

Global copper production declined 2.5% YoY to 1.943mt in Aug 2018.



China: Refined copper monthly production and YoY growth

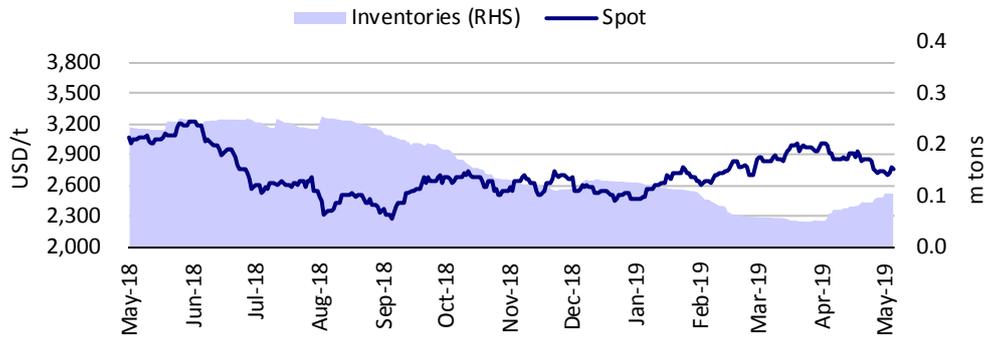


Non-ferrous

Zinc

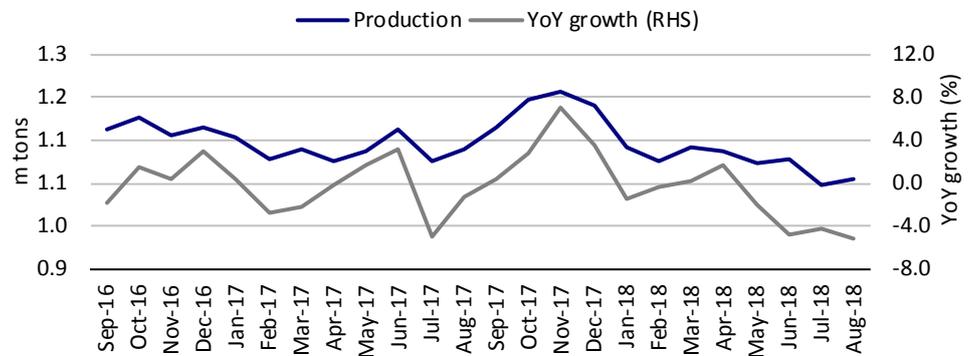
LME inventories and prices

Zinc (cash LME) was flat
WoW at USD2,755 /t

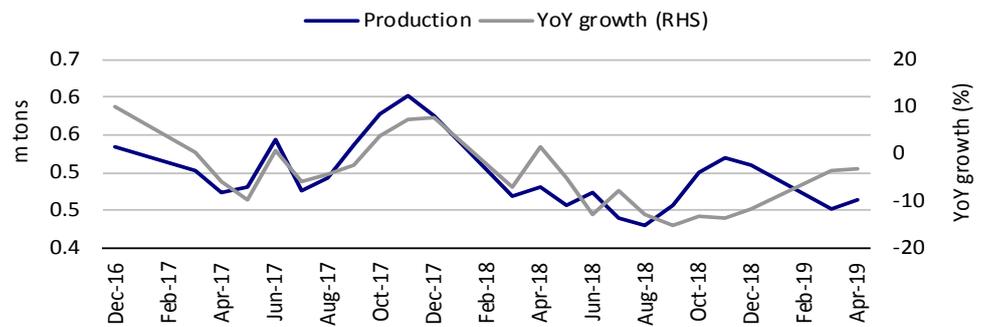


Global refined zinc monthly production and YoY growth

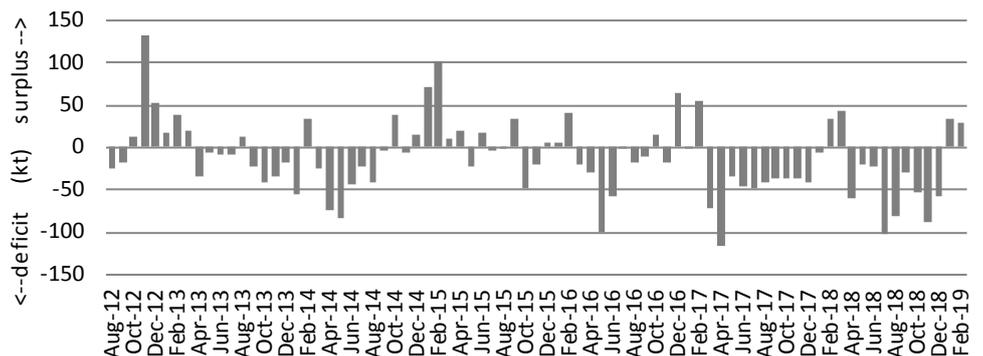
Global zinc production
declined 5% YoY to
1.067mt in Aug 2018.



China: Refined zinc monthly production and YoY growth



Zinc: Global metal surplus (deficit) – kt

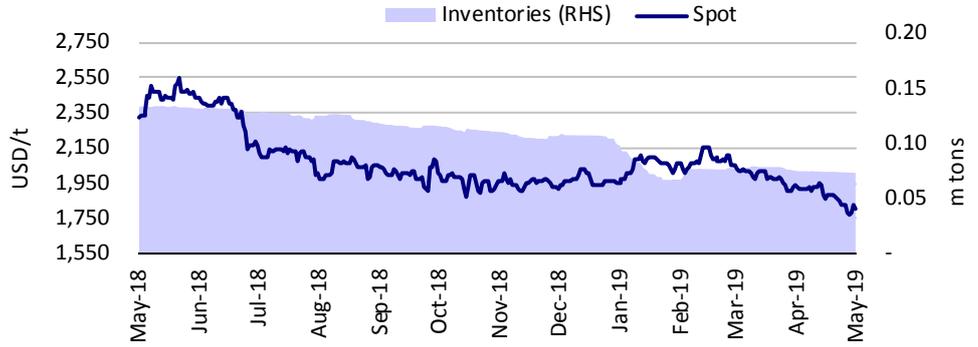


Non-ferrous

Lead

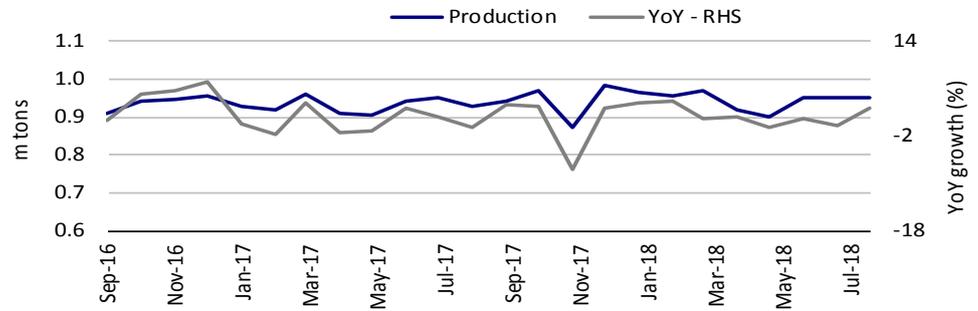
LME inventories and prices

Lead (cash LME) was down ~1% WoW at USD1,809/t.

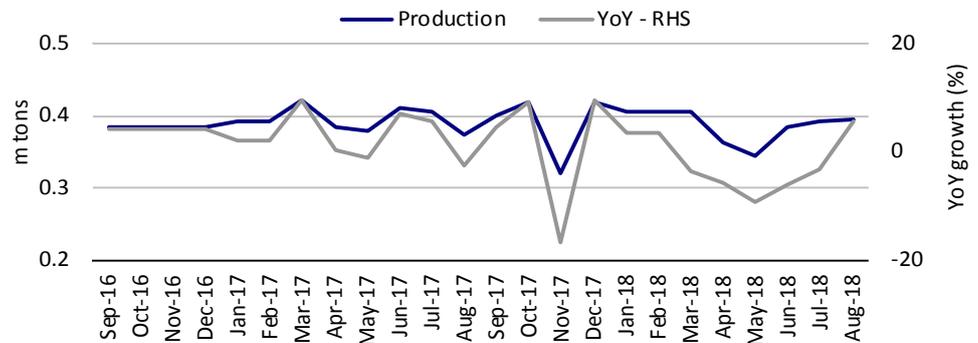


Global refined lead monthly production and YoY growth

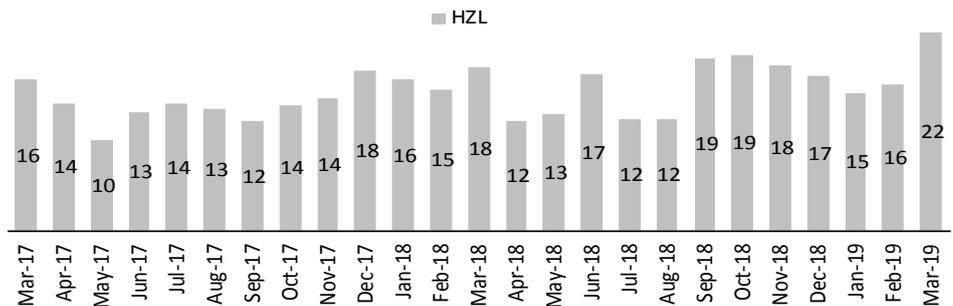
Refined lead production increased 2.7% YoY to 951kt in Aug 2018.



China: Refined lead monthly production and YoY growth



India: Company-wise refined lead monthly production

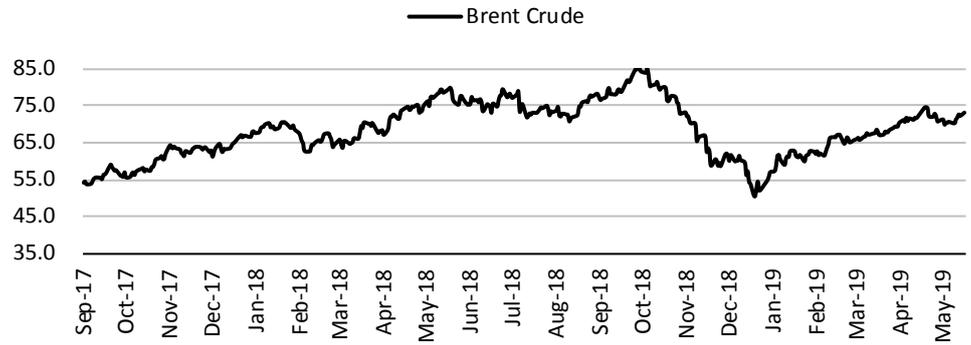


Source: Bloomberg, MOSL

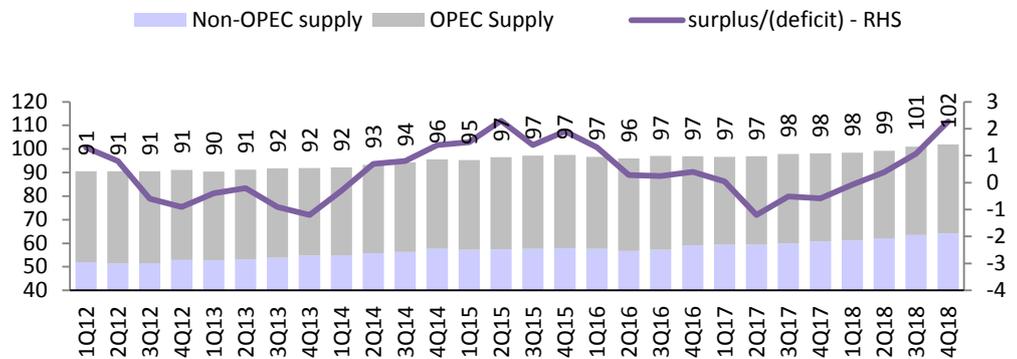
Crude Oil

Brent (crude oil) rose ~2%
WoW to USD73/bbl.

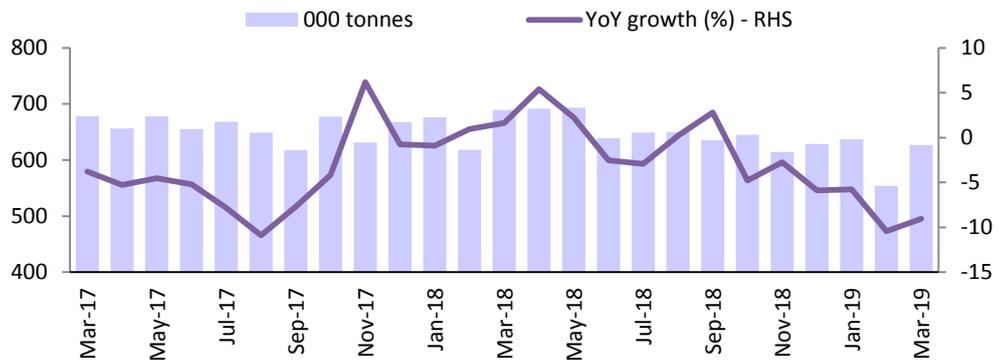
Brent crude oil price (USD/bbl)



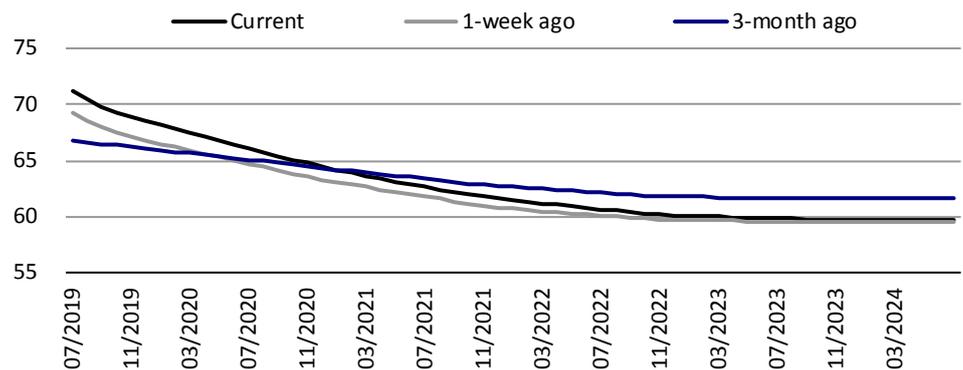
Global crude oil quarterly supply & surplus/(deficit) - mbpd



Crude oil production by Private/JVs in Rajasthan ('000 tonnes)



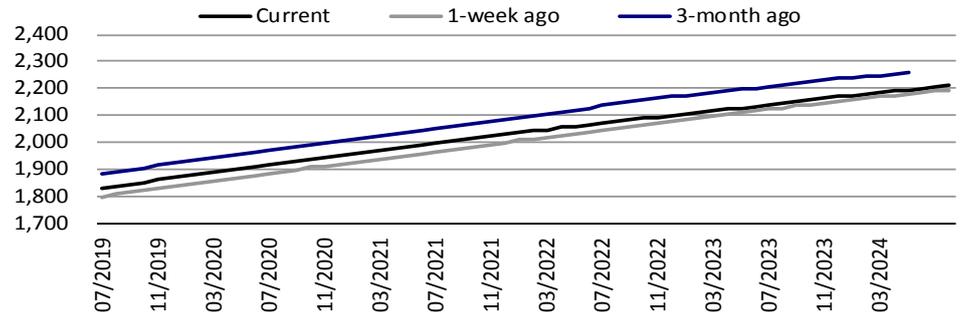
Crude oil futures (USD/bbl)



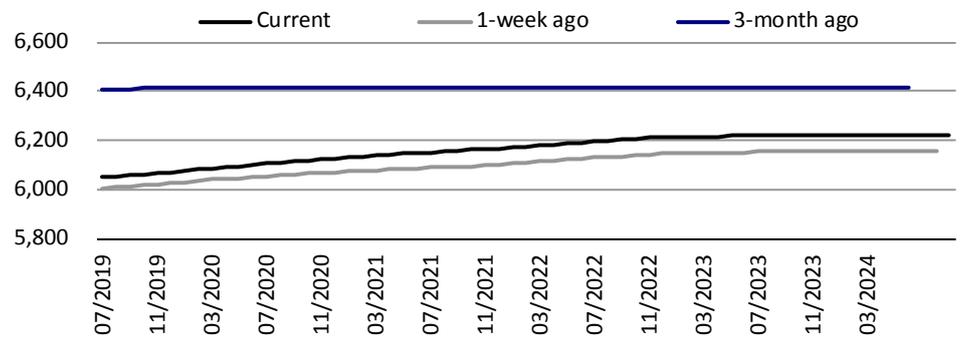
Source: Bloomberg, MOSL

Commodity forward curves

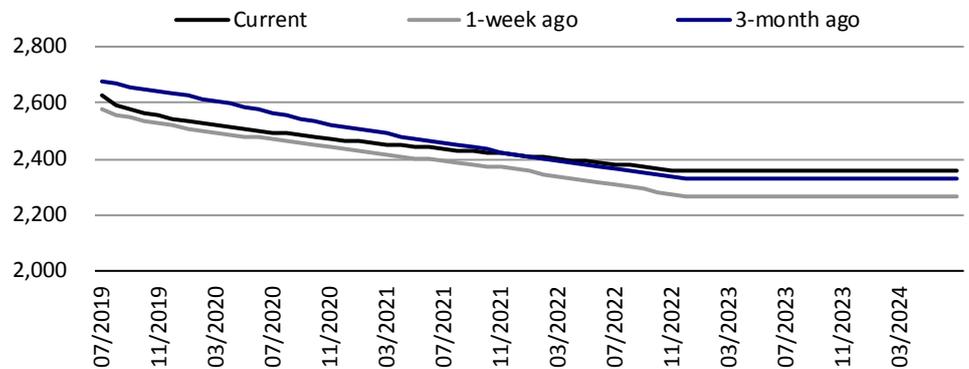
LME aluminum (USD/ton)



LME copper (USD/ton)



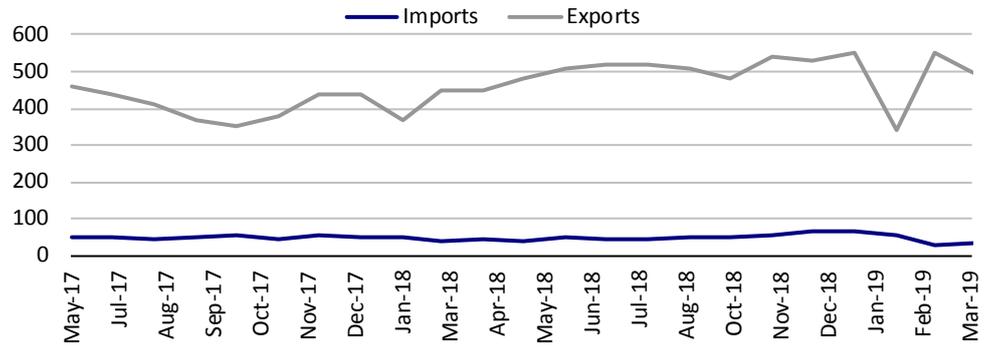
LME zinc futures (USD/ton)



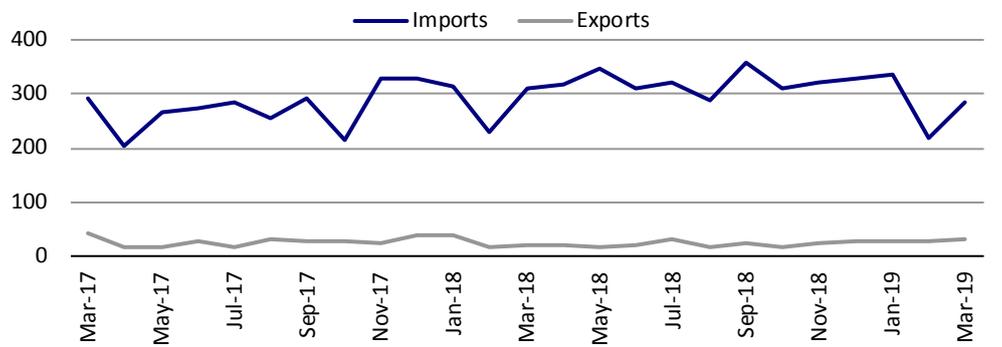
China non-ferrous trade data

Aluminum exports were up 11% YoY to 498kt in March 2019.

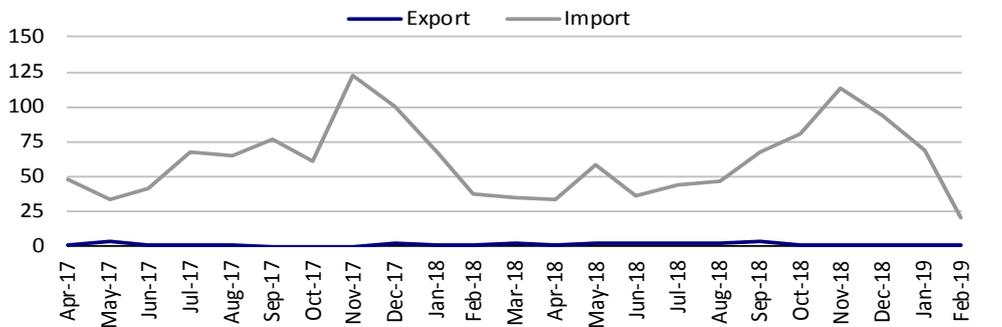
China's aluminum trade ('000 tons)



China's refined copper trade ('000 tons)

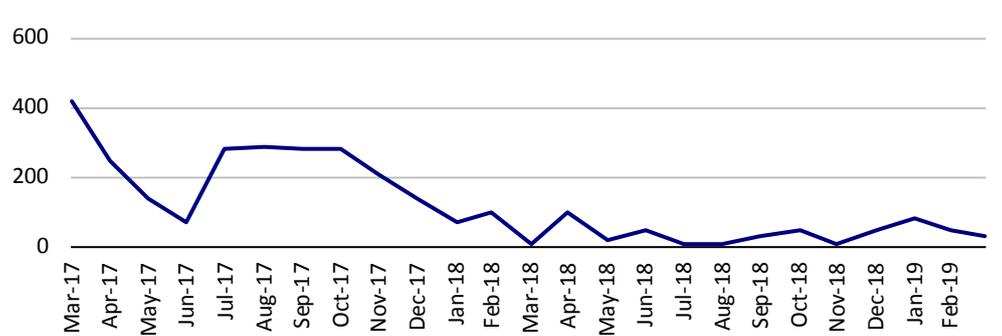


China's refined zinc trade ('000 tons)



China's alumina imports ('000 tons)

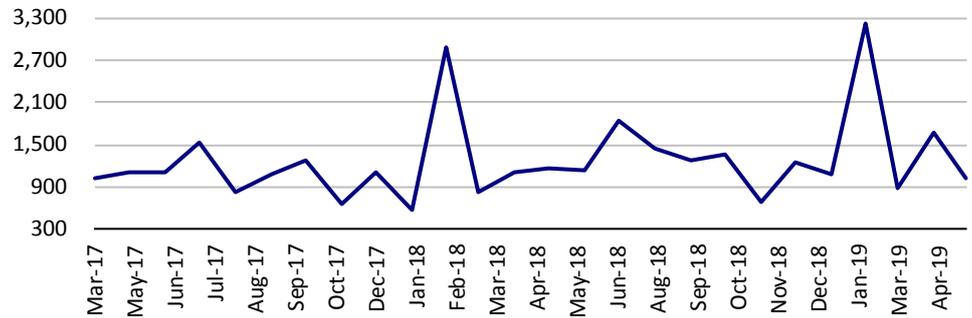
Chinese alumina imports tripled YoY to 30kt in March 2019.



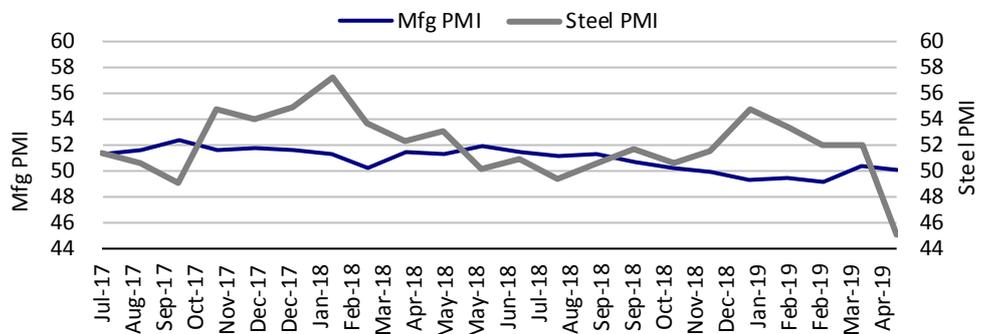
Source: Bloomberg, MOSL

Key indicators

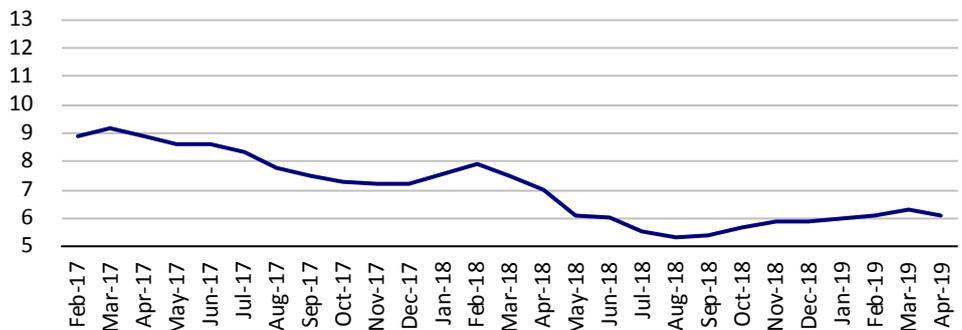
China new loan growth (Yuan b)



China: PMI

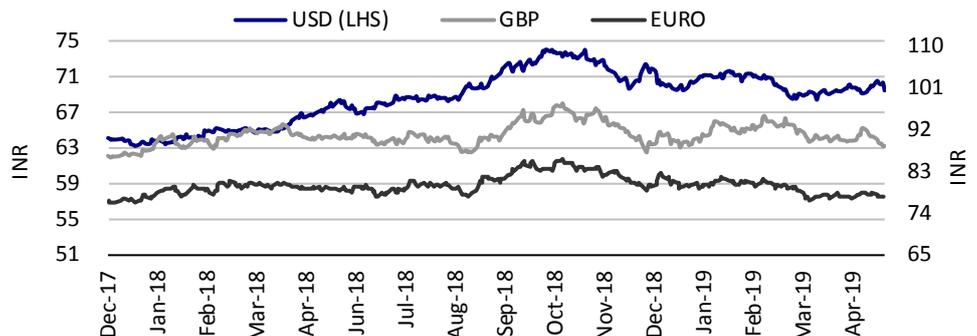


China: Fixed asset investment growth (%)



Fixed asset investment growth was at 6.1% YoY in April 2019.

Currency movement with respect to the rupee

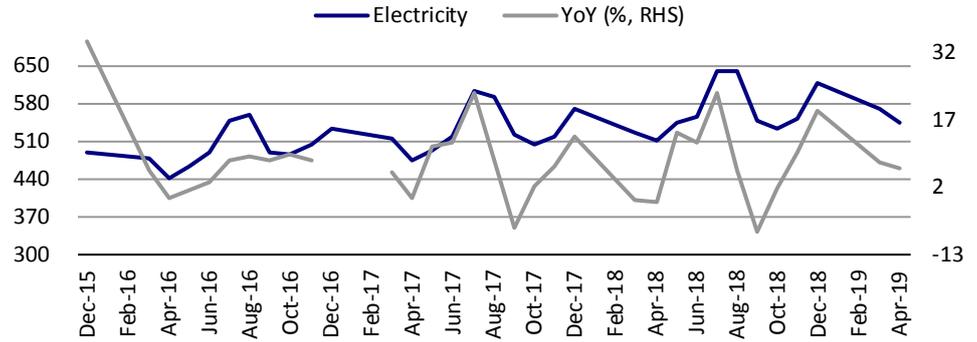


Source: Bloomberg, MOSL

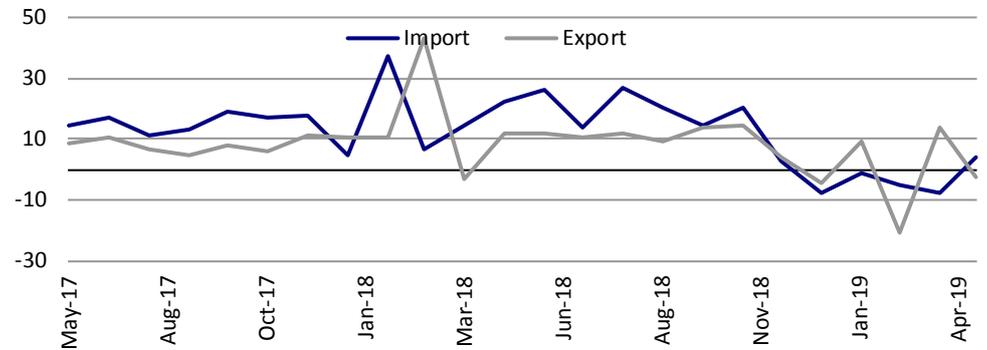
Key indicators (Contd...)

China electricity generation increased 6.5% YoY in Apr 2019.

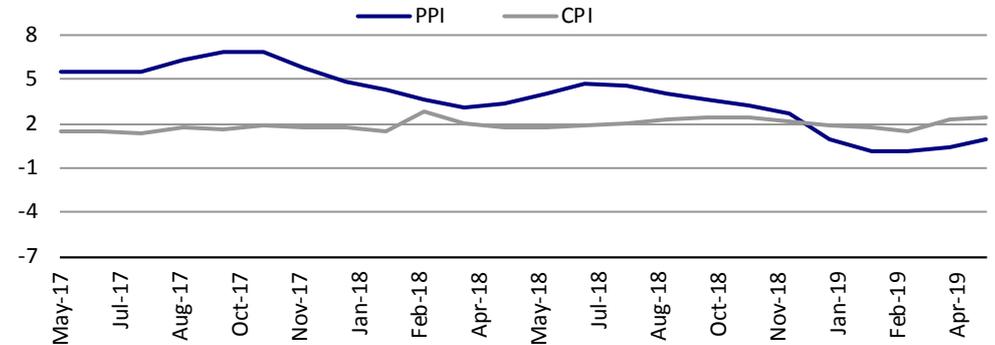
China Energy Production: Electricity (b kwh)



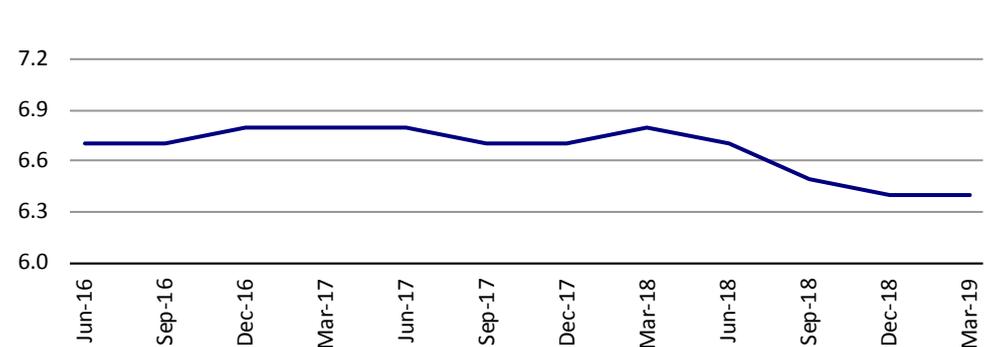
China Monthly Trade YoY (%)



China Price Index YoY (%)



China GDP YoY (%)

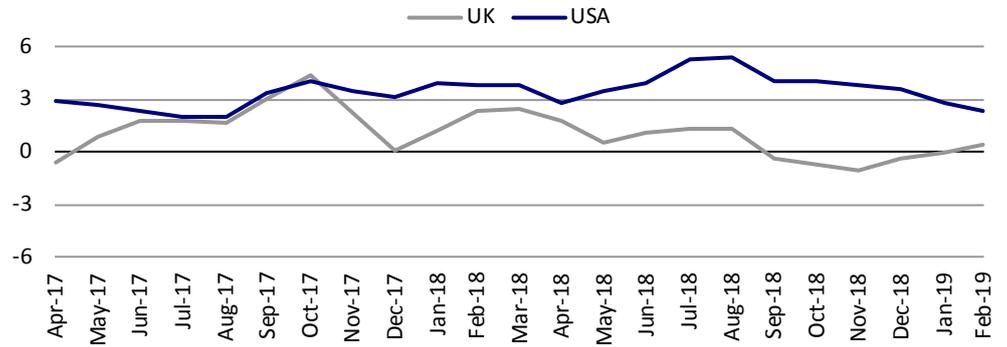


China's GDP growth was 6.4% in 1QCY19.

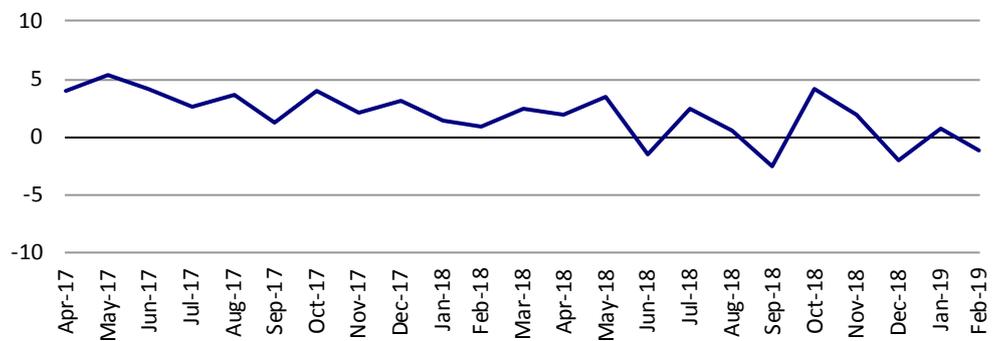
Source: Bloomberg, MOSL

Industrial production growth

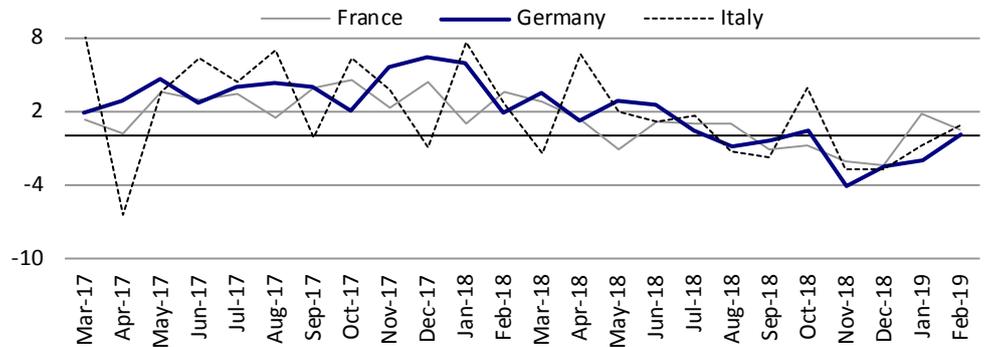
The UK and the USA (%)



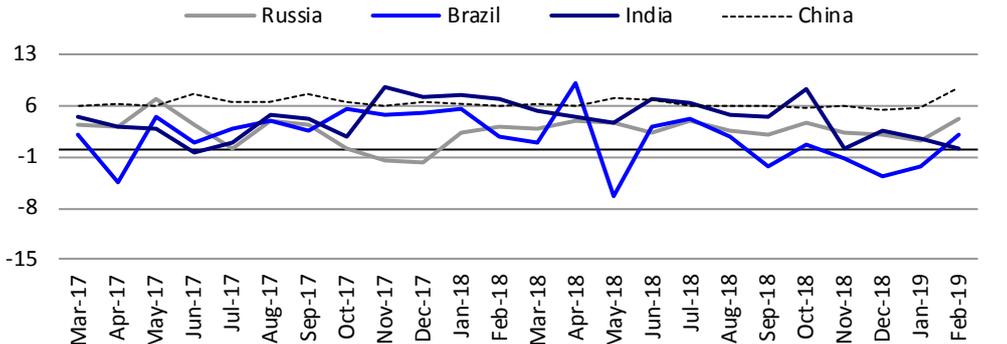
Japan (%)



European Union (%)



BRIC (%)



Source: Bloomberg, MOSL

Stock exchange announcements

None

Metals Valuation Matrix

Valuations: Indian Companies

	Rating	Price (INR)	MCAP (USD M)	EPS			P/E (x)		EV/EBITDA (x)		P/B(x)	
				FY18	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
Steel												
Tata Steel	Neutral	469	6,477	69.5	88.6	78.6	5.3	6.0	5.1	5.6	0.9	0.8
JSW Steel	Buy	276	9,482	23.4	30.6	21.2	9.0	13.0	6.6	7.8	2.1	1.9
JSPL	Buy	158	2,053	-8.5	2.3	3.7	68.6	42.3	6.7	6.3	0.5	0.5
SAIL	Neutral	48	2,809	0.3	5.0	6.1	9.6	7.9	7.1	6.1	0.5	0.5
Non-Ferrous												
Hindalco	Buy	195	5,712	18.9	24.7	22.9	7.9	8.5	5.3	5.7	1.1	1.0
Nalco	Buy	49	1,787	5.1	8.8	5.7	5.6	8.5	2.4	4.1	0.9	0.9
Vedanta	Sell	163	6,874	20.4	18.1	16.6	9.0	9.8	5.7	4.6	1.0	0.9
Rain Ind.*	Buy	97	462	23.7	20.4	11.7	4.7	8.3	4.9	6.7	0.7	0.7
Mining												
Coal India	Buy	233	20,872	19.2	27.4	29.0	8.5	8.0	3.9	3.9	7.0	6.4
Hindustan Zinc	Neutral	255	15,304	21.1	18.8	21.6	13.5	11.8	8.5	7.1	3.2	2.8
NMDC	Buy	90	5,079	13.1	15.4	10.7	5.8	8.4	3.2	4.7	1.1	1.0

*CY reporting

Source: MOSL

Valuations: Global Companies

Company	BBG CODE	Currency	PRICE	MCAP (US\$ M)	PE (x)		EV/EBITDA(x)		P/BV (x)
					CUR YR	NXT YR	CUR YR	NXT YR	CY18
Mining									
BHP-Billiton	BHP AU	AUD	38	126,186	14.0	12.8	6.0	5.8	na
FMG	FMG AU	AUD	9	19,674	8.1	7.4	4.7	4.4	na
Rio Tinto	RIO AU	AUD	101	101,415	11.7	13.1	5.3	5.7	na
Vale	Vale US	USD	48	61,493	6.5	7.1	4.5	4.8	1.4
Teck Resources	TCK US	USD	20	11,559	7.1	8.2	3.8	4.2	0.7
Anglo American	AAL LN	GBP	1,964	32,341	8.5	9.5	4.1	4.4	na
STEEL									
Arcelor Mittal	MT NA	EUR	15	16,528	5.3	4.7	3.8	3.6	0.4
Posco	005490 KS	k KRW	235	17,095	7.1	6.7	4.2	4.0	0.5
US Steel	X US	USD	15	2,515	7.4	7.6	3.9	3.8	0.6
Nucor	NUE US	USD	53	16,242	9.1	9.5	5.8	6.0	1.6
JFE	5411 JT	JPY	1,633	8,869	6.7	6.2	6.4	6.1	na
Gerdau	GGBR4 BZ	BRL	14	5,432	9.3	8.7	5.3	5.0	1.1
Angang	000898 CH	CNY	5	5,079	7.3	7.5	4.8	4.7	0.8
Ali - Smelting									
Alcoa	AA US	USD	25	4,546	31.6	10.1	3.5	3.3	0.9
Hydro	NHY NO	NOK	34	7,919	16.8	9.5	5.9	4.3	0.8
Rusal	486 HK	HKD	3	5,633	3.3	2.8	8.1	6.7	0.9
Ali - Rolled									
Arconics	ARNC US	USD	22	9,852	12.1	10.5	7.0	6.5	na
Constellium	CSTM US	USD	9	1,254	9.7	6.8	6.1	5.4	18.0

Metals Stock Performance

Among large-cap companies, JSW steel was the best relative performer.

Among mid-cap companies, Adhunik Metaliks was the best relative performer over one month.

Among global mining companies, FMG was the best relative performer over one week.

Among global steel majors, Nippon was the best relative performer.

Among the global aluminum, Chalco was the best relative performer

Metals stock performance on absolute and relative basis (%)

Months	Absolute Perf (%)				Relative Perf to Sensex (%)			
	1	3	6	12	1	3	6	12
Steel								
Tata Steel	-15.0	-2.7	-20.3	-23.0	-11.6	-8.4	-28.2	-30.9
SAIL	-18.7	3.0	-25.8	-37.5	-15.3	-2.7	-33.8	-45.5
JSW Steel	-5.3	-1.5	-18.6	-16.9	-1.8	-7.2	-26.6	-24.8
JSPL	-17.2	9.9	-11.1	-39.0	-13.7	4.1	-19.0	-46.9
NMDC	-12.9	-2.8	-15.9	-21.2	-9.5	-8.5	-23.9	-29.1
Non-ferrous								
Vedanta	-13.2	5.9	-21.3	-42.0	-9.8	0.2	-29.2	-49.9
Hindustan Zinc	-10.3	2.5	-4.2	-15.3	-6.9	-3.2	-12.1	-23.2
Nalco	-12.5	1.6	-26.8	-34.9	-9.1	-4.2	-34.8	-42.8
Hindalco	-10.5	0.1	-16.5	-17.7	-7.1	-5.6	-24.4	-25.7
Mid Caps								
Monnet Ispat	-24.0	-33.7	-41.7	-51.0	-20.6	-39.4	-49.6	-58.9
Godawari	-18.2	-21.0	-49.0	-59.3	-14.8	-26.7	-56.9	-67.3
Sarda Energy	-17.0	0.4	-16.1	-40.0	-13.6	-5.4	-24.1	-47.9
Tata Sponge	-13.7	-5.6	-17.5	-37.5	-10.2	-11.3	-25.4	-45.4
Adhunik Metaliks	-3.2	64.8	-12.8	-22.9	0.2	59.1	-20.7	-30.8
Bhushan Steel	-20.0	7.3	5.6	11.6	-16.6	1.6	-2.4	3.7
Jai Balaji	-19.8	91.6	67.7	191.0	-16.4	85.9	59.7	183.1
Rain Industries	-25.1	6.8	-41.1	-60.2	-21.7	1.1	-49.1	-68.2
Prakash Industries	-16.3	-8.5	-30.7	-57.3	-12.9	-14.2	-38.7	-65.2
SENSEX	-3.4	5.7	7.9	7.9	-	-	-	-

Global Metals stock performance on absolute basis (%)

	Absolute Perf (%)					
	1week	1month	3 months	6 months	7 months	12 months
Mining						
Rio Tinto	5.9	0.0	7.5	26.0	7.2	7.2
BHP Billiton	4.5	-2.3	4.9	19.8	11.7	11.7
Vale	-7.1	-14.6	-4.5	-20.2	-22.9	-22.9
FMG	18.7	10.5	41.6	125.4	82.7	82.7
Anglo American	3.8	-9.7	2.1	19.7	4.3	4.3
Steel						
US Steel	-6.8	-12.9	-35.6	-46.2	-61.1	-61.1
Nucor	-6.2	-8.5	-10.8	-14.2	-19.0	-19.0
Arcelor Mittal	-10.0	-28.5	-25.0	-32.1	-52.2	-52.2
Angang	-1.6	-11.9	-5.8	-9.0	-22.4	-22.4
Posco	-2.7	-12.7	-12.0	-5.8	-34.9	-34.9
JFE Holdings	-8.1	-16.6	-15.2	-22.8	-34.2	-34.2
Nippon	-1.0	-9.5	-9.8	-13.0	-26.5	-26.5
Thyssen Krupp	-11.0	-4.5	-6.1	-24.9	-41.8	-41.8
Voest Alpine	-3.6	-14.9	1.8	-16.7	-45.1	-45.1
Gerdau	-5.9	-14.4	-21.8	-17.4	-30.8	-30.8
Aluminium						
Alcoa	-2.2	-11.6	-13.1	-30.3	-51.7	-51.7
Rusal	-4.2	-11.8	-23.3	33.3	70.5	70.5
Chalco	4.0	-14.7	-4.1	-3.7	-34.1	-34.1

NOTES

Explanation of Investment Rating	
Investment Rating	Expected return (over 12-month)
BUY	>=15%
SELL	< -10%
NEUTRAL	> -10 % to 15%
UNDER REVIEW	Rating may undergo a change
NOT RATED	We have forward looking estimates for the stock but we refrain from assigning recommendation

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